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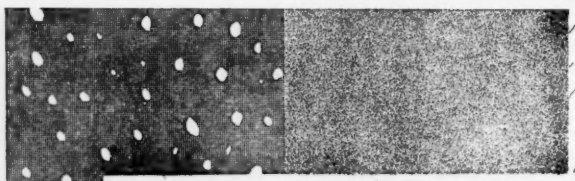

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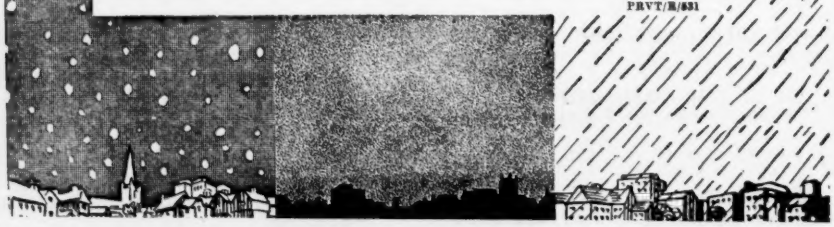

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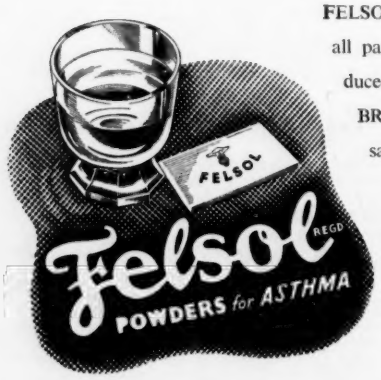

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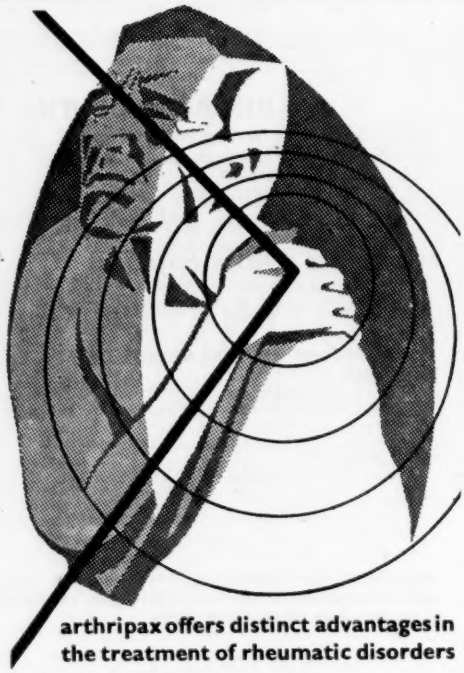

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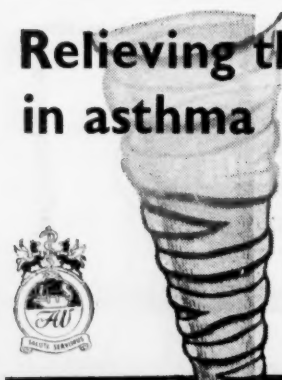
'Aludrox' buffers gastric acid to a pH of 3.5 to 4.0, at which level healing may proceed and the risk of alkalosis is avoided. Normal digestion is unimpaired and, in addition, 'Aludrox' provides the physical protection of a gel barrier over the surface of the ulcer, thus ensuring a safer environment for the reparative processes.

John Wyeth & Brother Limited, Clifton House, Euston Road, London, N.W.1

Relieving the bronchial tree in asthma



'ASMAC' TABLETS are formularized to provide symptomatic relief of the bronchial tree both during actual dyspnoeic attacks of bronchial asthma, and during remissions.

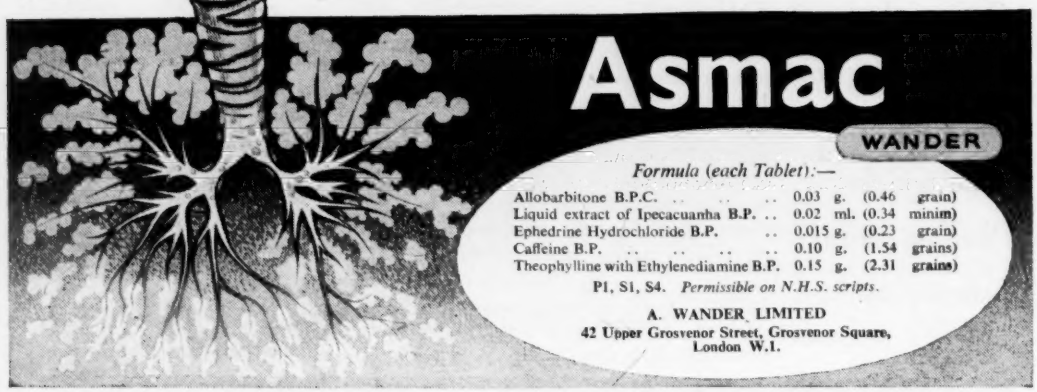
'Asmac' Tablets combine in a single prescription 'official' drugs recognized for their reliability to effect mental sedation, decongestion, expectoration and bronchodilatation.

Packs and Cost to Pharmacists :

Standard Tube of 20 : 3/–

Dispensing Bottles : 100, 12/– ; 500, 52/6 ; 1000, 102/6

M372.



Asmac

WANDER

Formula (each Tablet):—

Allobarbitone B.P.C.	0.03 g.	(0.46 grain)
Liquid extract of Ipecacuanha B.P.	0.02 ml.	(0.34 minim)
Ephedrine Hydrochloride B.P.	0.015 g.	(0.23 grain)
Caffeine B.P.	0.10 g.	(1.54 grains)
Theophylline with Ethylenediamine B.P.	0.15 g.	(2.31 grains)

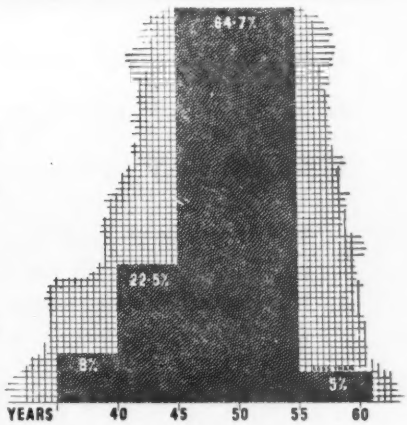
P1, S1, S4. *Permissible on N.H.S. scripts.*

A. WANDER LIMITED
42 Upper Grosvenor Street, Grosvenor Square, London W.1.

Why MIXOGEN is prescribed for menopausal symptoms

Because it is now established that :—

- combined male and female hormone treatment is the most effective in this condition.
- the correct balance of the two hormones is essential both for efficacy and economy—determined by extensive clinical trial in the U.K. and unique to Mixogen.
- both the hormones in Mixogen are completely effective when swallowed—thus maximum, immediate relief is given in the simplest and most convenient way.



Graph showing percentages of average age of onset of menopause, drawn from figures compiled by the Council of Medical Women's Federation in England.

Dosage : *Initially 1-2 tablets daily, reducing when possible.*
Packs : ***Perspex tubes of 25 tablets and bottles of 100, 250 and 500.***
Literature on request.

MIXOGEN

3.6 mg. Methyltestosterone
0.0044 mg. Ethinyloestradiol

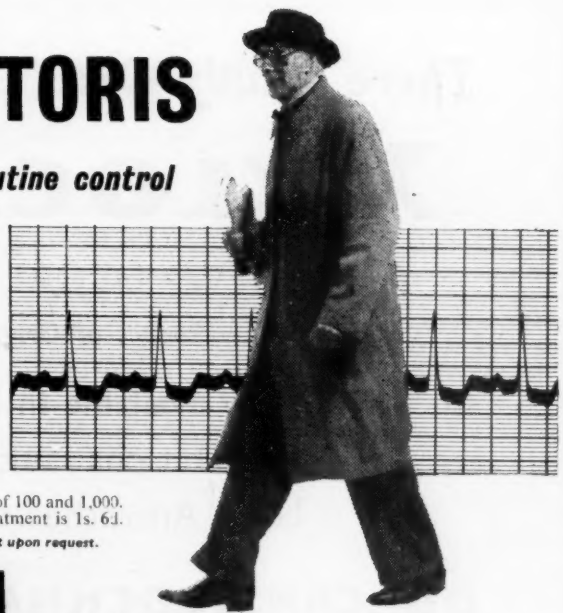
ORGANON LABORATORIES LIMITED
BRETTENHAM HOUSE · LANCASTER PLACE · LONDON, W.C.2
Telephone : TEMple Bar 6785-6-7, 0251-2. *Telegrams : Menformon, Rand, London*

ANGINA PECTORIS

A Bayer product for routine control

'Mycardol'* is a long-acting nitrite used in the routine control of angina pectoris. It gives prolonged protection against severe attacks, improves exercise tolerance and reduces the need for repeated doses of trinitrin — in some cases eliminating it altogether. Low toxicity makes this drug especially suitable for continuous long-term symptomatic treatment.

* pentaerythritol tetranitrate.



Packings: tablets of 30 mgm. in bottles of 100 and 1,000.
The basic N.H.S. cost of one week's treatment is 1s. 6d.

Literature and a sample will gladly be sent upon request.

Mycardol
Trade Mark

Manufactured in England by :
BAYER PRODUCTS LIMITED
AFRICA HOUSE, KINGSWAY, LONDON, W.C.2

Associated export company: WINTHROP PRODUCTS LIMITED, LONDON

Every patient with essential hypertension is a potential candidate for ***RAUDIXIN*** *therapy*

RAUDIXIN is prepared from the roots of Rauwolfia serpentina, gathered in the foothills of the Himalayas. It is supplied as coated tablets, each containing 50 mg. of whole root, the uniformity of which is controlled by animal assay. Because of its safety and the stability of its hypotensive effect, RAUDIXIN can be confidently prescribed for all patients with essential hypertension. It is especially recommended for the large, indeterminate group whose symptoms are not severe enough to warrant the use of other hypotensive agents. Critical adjustment of dosage is unnecessary. In more advanced cases, RAUDIXIN is a valuable adjunct to other agents.

RAUDIXIN TABLETS

are available in bottles of 25, 100 and 1,000.

E. R. SQUIBB & SONS 17 - 18 OLD BOND STREET, LONDON, W.1.

There is only ONE

XYLOCAINE*

THE NEW LOCAL ANAESTHETIC

—Product of Original Research

Now available in Packings and Preparations suitable for all Local Anaesthetic Techniques

DUNCAN, FLOCKHART & CO., LTD.

SPECIALISTS IN ANAESTHETICS

EDINBURGH LONDON

*Regd. Trade Mark Manufactured under licence from A. B. Astra, Sodertalje, Sweden

More than the announcement of a new drug

BIOPAR

(Vitamin B_{12} and intrinsic factor). The beginning of a new Era in *VITAMIN B_{12} THERAPY*

Effective ORAL replacement for injectable Vitamin B_{12} in ALL conditions previously considered amenable only to injected Vitamin B_{12}.

BIOPAR TABLETS

write for literature and samples to

THE ARMOUR LABORATORIES
(ARMOUR & COMPANY LTD.)
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Telephone
CLERKENWELL 9011
Telegrams
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LONDON

KAYLENE-OL

(brand of colloidal kaolin B.P. and liquid paraffin)

in the treatment of Intestinal Toxæmia, Chronic Colitis and Spastic Constipation

In the Ministry of Health's comparative list Kaylene-ol is quoted at exactly the same price as the B.P. equivalent.

All the products of Kaylene (Chemicals) Limited are in Category 2 or Category 4 in the Ministry of Health's Classified List, and are therefore prescribable on Form E.C.10.

Samples and literature on request.

KAYLENE BRAND YERRA BIC ILLAYA

KAYLENE (CHEMICALS) LIMITED

Sole Distributors: **ADSORBENTS, LTD.,** WATERLOO ROAD, LONDON, N.W.2

Topical oestrogen therapy

for prompt stimulation of vaginal epithelium

Dienoestrol Cream

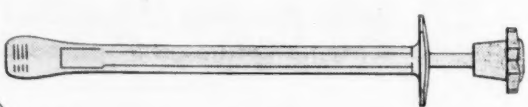
Ortho

in postmenopausal vaginitis
in atrophic vaginitis
in pruritus vulvae
in plastic pelvic surgery

Dienoestrol Cream (Ortho) contains:
Dienoestrol 0.1 mg. per gm. of absorptive cream base

Dosage: One applicatorful intravaginally daily for one to two weeks; reduced to once every two days for a similar period.

On original prescriptions specify
"Dienoestrol Cream (Ortho) with Applicator"
Also available in "tube only" refills for repeat prescriptions.



LITERATURE ON REQUEST

Ortho Pharmaceutical Limited
HIGH WYCOMBE · BUCKINGHAMSHIRE · ENGLAND

Ortho

modern treatment of varicose conditions

Modern technique embraces ligature, injection and firm compression bandaging

Suitable compression bandages are:

Elastoplast *with* **Porous Adhesive**

Elastocrepe - Elastolex

Elastoweb

Diachylon/Elastocrepe

Viscopaste - Ichthopaste

Coltapaste

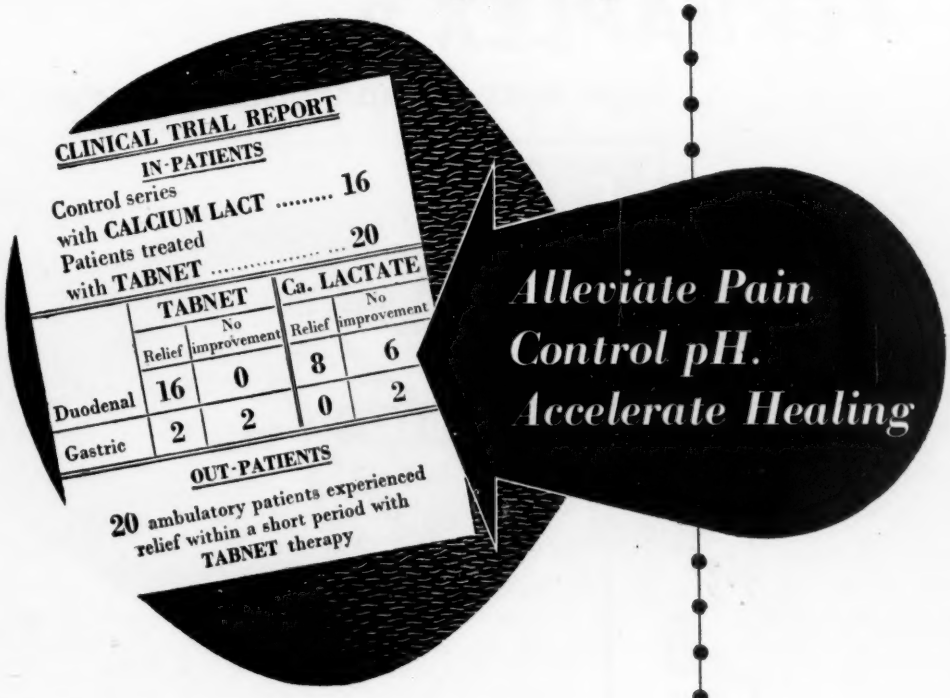
Made by **T. J. SMITH & NEPHEW LTD., NEPTUNE ST., HULL**

for their marketing Organisation **SMITH & NEPHEW LTD., WELWYN GARDEN CITY, HERTS.**

PLEASE
ALL PAR
Notes for Committee Mtg 30th
Cost of Sulphonamide and Antibiotic Treatment
In a series of 6000 pneumonia cases (B'ham) it was estimated that the average cost of treatment worked out at
* 7/8d for SULPHAMEZATHINE
19/- for Penicillin
Prof. Sir Harold Hill - Journal of Pharmacy & Soc. Med. July 53 p 112
It is cheaper
MANAGEMENT COMMITTEE AGENDA
DR C.G. Rex.
RESPIRATORY INFECTIONS
(cost of treating infants)
Letter in B.M.J (Hargest p 546)
gives the following figures for a 5 day course of treatment in the case of a 15lb baby -
* SULPHAMEZATHINE 1/-
various antibiotics. from
3/- to 33/-!!

'SULPHAMEZATHINE' is the registered trade mark of IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD., Wilmslow, Manchester
Ph.439
A subsidiary company of Imperial Chemical Industries Limited

A Hospital Report



. . . all duodenal ulcer patients experienced symptomatic relief and of these ten claimed relief after 1 day; four after 2 days; and two after 3 days.

. . . two patients with a gastric ulcer experienced relief of symptoms 2 to 3 days after starting therapy whilst the patients who did not improve had large eroding ulcers and were later operated upon.

. . . x-rays were taken 10 and 20 days after the patients' admission. Those receiving TABNET showed evidence of healing 10 days after commencing treatment. After 20 days the radiological appearances showed that the ulcers had healed in all cases except the two referred to above.

. . . in addition to these control cases twenty ambulatory patients received TABNET therapy and became symptom free within a short period.

FORMULA: *Each tablet contains: Dihydroxy aluminium aminoacetate 250 mgm*
Glycine 30 mgm
Available in bottles of: 100 tablets 7/- plus P.T. and 1,000 tablets 62/- plus P.T.

The Medical Management of Gastro-Duodenal Ulceration

TABNET
BRAND
DIHYDROXY
ALUMINIUM AMINOACETATE

TABNET Tablets may be prescribed on Form E.C.10

CALMIC LIMITED . CREWE HALL · CREWE · TEL. 3251-5

London: 2, Mansfield St., W.1. Tel. LANgham 8038-9.

FERRAPLEX B

IRON AND STANDARDISED VITAMINS

ADVANTAGES FERRAPLEX B, by combining adequate iron dosage with standardised vitamin content, provides a comprehensive and efficient hæmatinic compound for routine use, particularly in pregnant and undernourished women, in adolescence, in hæmorrhagic conditions and in the debility of advancing age.

* In recent years it has been shown that simultaneous administration of vitamin C and the B complex group together with iron gives much better results in hypochromic anæmias. The natural vitamin B complex used in FERRAPLEX B is a concentrate prepared from brewers' yeast.

* The comprehensive "one tablet" formula, the *standardised* vitamin potency and the reasonable price of FERRAPLEX B entirely conform with current economic requirements.

PACKINGS AND PRICES.
FERRAPLEX B tablets are available in bottles of 50 at 5/3d. and 250 at 23/3d. Retail prices subject to Professional discounts.

COMPOSITION

The average daily dose of six FERRAPLEX B tablets contains:—

FERROUS SULPHATE .....1 gramme
COPPER CARBONATE .....2 mg.
ASCORBIC ACID (Vitamin C).....50 mg.
NATURAL VITAMIN B COMPLEX.....2 grammes
including
Aneurine hydrochloride (B_1).....3 mg.
Riboflavine (B_2) .....6 mg.
Nicotinamide .....30 mg.
pantothenic acid, pyridoxine, and folic acid, choline, inositol, biotin, para-aminobenzoic acid and other naturally occurring factors of the vitamin B complex.

FERRAPLEX B

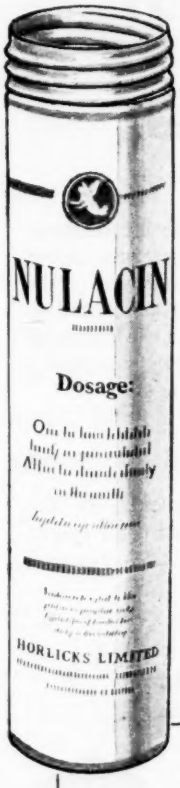
is manufactured in the laboratories of

C. L. BENCARD LTD

PARK ROYAL · LONDON · N.W.10

NULACIN

for continuous, maintained gastric anacidity



IT has long been recognized that the most rapid relief of the pain and discomfort of peptic ulcer and most rapid healing of the lesion are achieved when a continuous state of gastric anacidity is maintained.

Heretofore, this could only be attained with hospitalization and discomfort to the patient. Now clinical work in progress confirms NULACIN to provide "the nearest approach to the continuous intragastric drip for the ambulatory patient."★

A NULACIN tablet placed between the cheek and the gum dissolves slowly and releases its contained medicaments at a rate that gives continuous neutralization of the acid gastric juice, and accomplishes this with considerably less antacid than is required by any other method employing oral administration.

INDICATIONS: NULACIN tablets are indicated whenever acid neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

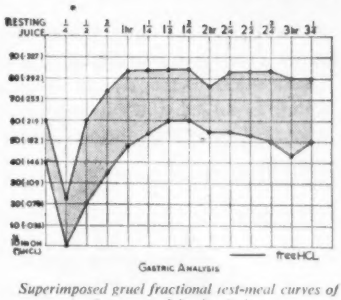
Dosage: Beginning half-an-hour after food a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly.

During the stage of ulcer activity, up to three tablets an hour may be required. During quiescent periods, for prophylaxis in peptic ulcer and for the relief of discomfort due to gastric hyperacidity, the dose of NULACIN is one or two tablets between meals.

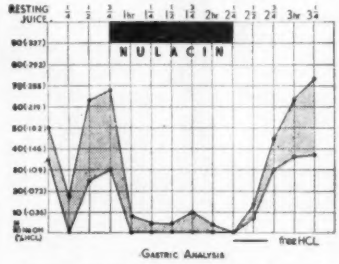
NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing unit of 25 tablets is free of purchase tax. (Price to pharmacists . . . 2/-.) Also available in tubes of 12.

★ *J. Lab. Clin. Med.* 42 :955 (1953)

BIBLIOGRAPHY: Brit. Med. J., 183-184, *23rd January*, 1954
Brit. Med. J., 180-182, *26th July*, 1952
Med. Press, 195-199, *27th February*, 1952



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

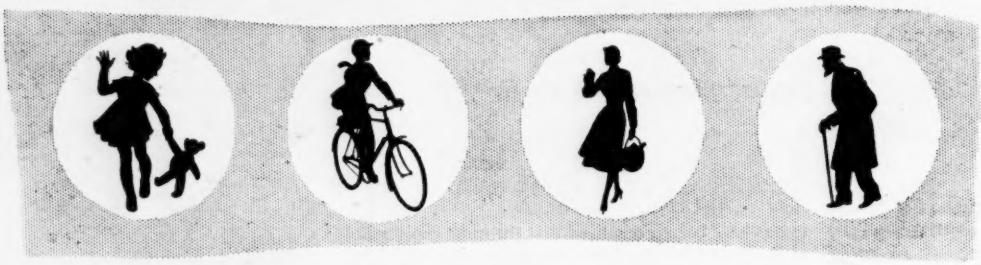
NULACIN

HORLICKS LIMITED *Pharmaceutical Division*
SLOUGH, BUCKS.

A NEW approach to an old problem

BLANDLAX

Restores normal bowel function without use of liquid paraffin



Safe for patients of all ages

Blandlax is efficient

BLANDLAX is a liquid preparation of prehydrated sodium carboxymethylcellulose, incorporating a sub-laxative dose of magnesium hydroxide. It prevents undue faecal dehydration, encourages the restoration of normal bowel function, and is soothing to inflamed mucosa.

Blandlax is safe

BLANDLAX is not habit forming; it contains no mineral oil or purgative and, therefore, cannot cause "leakage" or griping. It is devoid of the disadvantages associated with the administration of dry preparations of carboxymethylcellulose. With its agreeable flavour and creamy consistency, BLANDLAX is pleasant and easy to take.

Indications

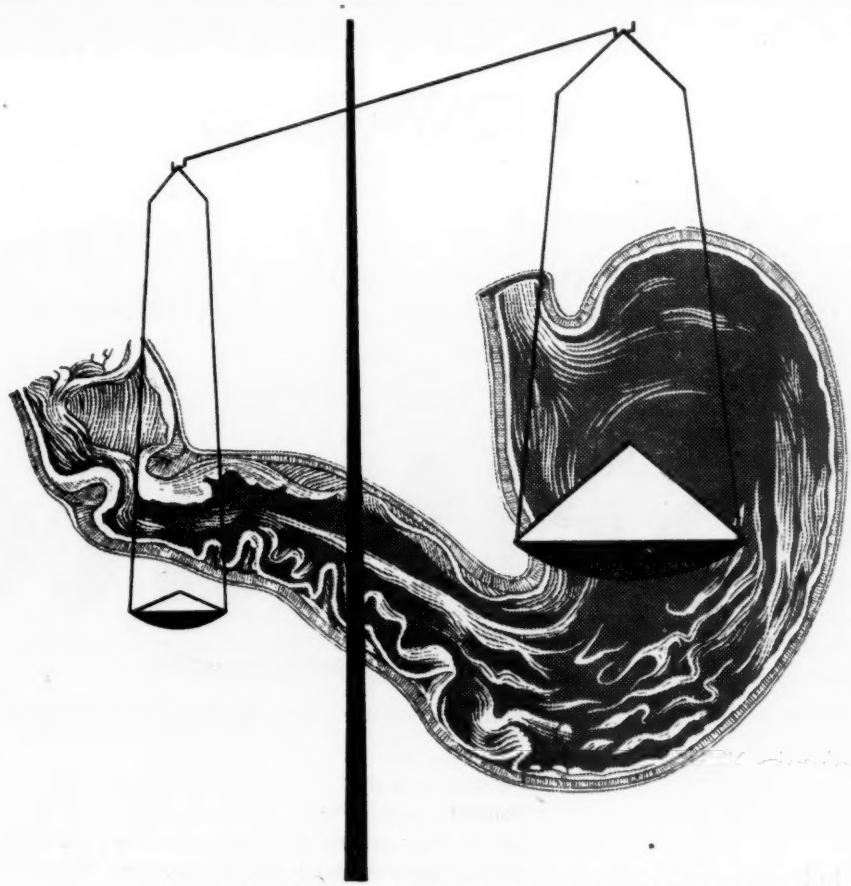
BLANDLAX is specifically indicated in the treatment of constipation associated with colitis, hæmorrhoids, pregnancy, peptic and duodenal ulcer, etc.

Supplied in bottles of 8 fl. oz. 16 fl. oz. & 80 fl. oz.
Retail prices 2/6d., 4/6d. and 18/-.
All subject to the usual discounts.

Descriptive literature obtainable from The Medical Department Boots Pure Drug Co. Ltd. Nottingham, England

Boots

3195



A POTENT STARCH-DIGESTING ENZYME

TAKA-DIASTASE, a potent starch-digesting enzyme, is capable of liquefying 300 times its own weight of cooked starch in conditions found in the normal stomach. As a digestive agent, either alone or combined with insoluble carbonates and aromatics for correcting hyperacidity, it is unsurpassed for the treatment of gastric discomfort.

TAKA-DIASTASE

Starch-digesting enzyme

TAKA-DIASTASE SEDATIVE ELIXIR (No. 198)

A combination of Taka-Diastase, bismuth and nux vomica for dyspepsia accompanied by nausea or pain.

In bottles of 4, 16 & 80 fluid ounces

TAKAZYMA

Taka-Diastase, with sub-carbonates. Gives 3-fold relief—for (1) hyperacidity (2) undigested starch (3) irritation of gastric mucosa.

Powder in jars of 2 ozs, & tins of 1lb; Lozenges in bottles of 30 & 100

Parke, Davis & Company, Limited, *Inc. U.S.A.*, Hounslow, Middlesex. Tel: Hounslow 2361

460

A new oral prophylactic tablet in the treatment of pre-cordial pain of angina pectoris:

Peritrate

TRADE MARK
brand of Pentaerythritol Tetranitrate

A coronary vasodilator, active ½ an hour after swallowing and effective for 4 to 5 hours. Each tablet is of 10 mg. strength.

Peritrate is a drug of considerable benefit in the prophylactic treatment of patients with coronary insufficiency, regardless of their age. The evidence of clinical trials indicates that in some cases Peritrate may protect completely against attacks; in others, the number of attacks is substantially reduced; while those attacks not prevented may be less intense and of shorter duration. Results so far obtained with Peritrate suggest that it is more efficacious than drugs such as aminophylline or khellin; also there are certain other beneficial effects which can be expected:

1. Less palpitation, especially at night.
2. Shortness of breath on effort, less severe.
3. An improvement of 50 per cent in distance walked.
4. Reduction of nitroglycerin requirement.
5. The negative S-T segment shifts, ordinarily occurring after exercise, modified; Peritrate has returned the abnormal resting electro cardiogram towards normal in a significant number of cases.

DOSAGE 4 to 8 tablets (40 to 80 mg.) as required.
PACKING Bottles of 50 and 500 tablets.

CHILCOTT *Laboratories* LTD

Sole Distributors: William R. Warner & Co. Ltd., Power Road, London, W.4

FOR THE EFFECTIVE LOCAL TREATMENT OF SINUSITIS

Penicillin

the potent and penetrating antibacterial action of 1,500 units of penicillin per ml.
Activity in the presence of pus

plus

Paredrinex

rapid, efficient, and safe vasoconstrictor that by shrinking oedematous and engorged tissues enables the penicillin to reach all affected areas in adequate concentration

equals

PENDEX

for effective local penicillin therapy in upper respiratory tract infections
sinusitis — rhinitis — nasopharyngitis

Available, on prescription only, in 15 ml. (½-oz.) bottles. Detailed information on request.

For cost to N.H.S., please see M & J list of costs dated October 1953

MENLEY & JAMES, LIMITED, COLDHARBOUR LANE, LONDON, S.E.5

PEP113 *for* Smith Kline & French International Co., owner of the trade marks 'Pendex' and 'Paredrinex'

Improved milk drip therapy

Whenever *whole protein* cannot be ingested, digested, absorbed or utilised, Casydrol (Oral)—predigested protein—may well speed recovery and hence discharge from hospital.

Casydrol (Oral) is half amino-acids and polypeptides and half lactose—the lactose helps to meet the caloric needs of the patient and spares the protein for tissue regeneration. Casydrol (Oral) is ideally suitable for administration by intragastric drip and is an advance on milk drip therapy.

Casydrol

ORAL

A product of **Benger Laboratories**

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE · ENGLAND

NAPHTHIONIN

A new haemostatic for intravenous or intramuscular injection used ante operation to inhibit haemorrhage and for the control of bleeding after surgical intervention. In patients whose bleeding and clotting times are above normal, Naphthionin has interesting applications in the prophylaxis of haemorrhage. It enables such patients to be protected from the risk of haemorrhage during operation, and during the post-operative period.

Naphthionin reduces clotting and bleeding times by about 50%. Tolerance is excellent even where considerable or prolonged dosage is indicated. Supplied in boxes of 2 x 10 cc. ampoules.

Maw's

THROMBIN (Maw)

A haemostatic for topical use in surgical and dental procedures for the immediate arrest of haemorrhage. Of particular value in conjunction with plasma as a physiological adhesive in plastic and cosmetic surgery.

THROMBORAL

A preparation of suitably buffered Thrombin for oral administration in the treatment of gastric haemorrhage, oesophageal varices and kindred conditions.

THROMBOPLASTIN (Maw)

For reagent use in the laboratory determination of the prothrombin time in anticoagulant therapy.

HEPARIN (Maw)

A pure pyrogen-free preparation. For conditions of thrombosis, thrombo-embolism, etc., the anti-coagulant of choice.

REAZIDE

A new hydrazide for specific use in all forms of tuberculosis. Compatible with P.A.S. streptomycin and other antibiotics. Exhibiting greater constancy of action, remarkable absence of side effects and outstanding reduction in toxicity.

Clinical samples and literature are available on request from the Medical Research Department.

An agreement has been completed under which the products of Laboratories OM of Geneva are now prepared and distributed in Gt. Britain and Northern Ireland solely by S Maw Son and Sons Limited.

Maw's

ETHICAL PRODUCTS

S MAW SON AND SONS LIMITED

BARNET ENGLAND

ZONDEK'S METHOD

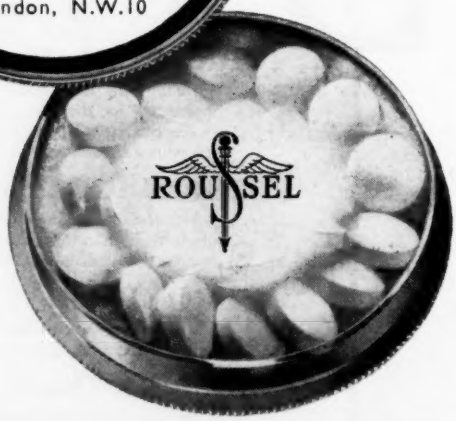
MEDICAL CURETTAGE

20 TABLETS

AMENORONE

Each tablet contains
Ethisterone 10 mg.
Ethinyl Oestradiol 0.01 mg.

ROUSSEL LABORATORIES LTD.
847 Harrow Road,
London, N.W.10



4 TABLETS DAILY FOR 5 DAYS

FOR

AMENORRHOEA

AND OTHER MENSTRUAL DISORDERS

Box of 20 tablets intended for a 5-day course. Also bottles of 100 and 500.

BASIC N.H.S. COST

Dispensed from packs of :	500	100	20
Price to Chemist for 20 tablets :	7/4	8/4	9/6

ROUSSEL LABORATORIES LTD
843-847 Harrow Road, London, N.W.10 LADbroke 3608

A new means of treating mild & moderate Hypertension

. . . . . RAUWILOID

Rauwiloid represents an alkaloidal extract of the root of the Indian plant *Rauwolfia serpentina*. The hypotensive action of this drug has long been known, but a purified, standardized dosage form has not previously been available. In the form of Rauwiloid, all the advantageous features of the drug are provided in a reproducible alkaloidal mixture. Each batch of Rauwiloid is biologically tested in dogs for its effectiveness in producing reduction of blood pressure, bradycardia, and sedation.

What Rauwiloid does

The hypotensive action of *Rauwolfia serpentina* is of moderate intensity.[1] It is not apparent for several days after therapy is initiated and does not attain its maximum extent for weeks or even months.[2] When therapy is stopped, the hypotensive effect persists for some time.[3] Coincidentally with the hypotensive action, Rauwiloid produces a mild bradycardia, especially advantageous in the presence of the tachycardia which so frequently disturbs the hypertensive patient. A significant feature of Rauwiloid is the distinct sense of well-being and emotional calm it induces, as well as the prompt relief of symptoms experienced by the patient. The entire daily dose of Rauwiloid may be taken at one time, for instance upon retiring. Rauwiloid produces no undesirable side effects, even when given in excessive amounts. Dosage therefore is not critical, hence exact dosage calculation is not necessary. Rauwiloid is not a ganglionic or adrenergic blocking agent, and does not interfere with postural reflexes.

Available evidence shows that when a second hypotensive agent is given with *Rauwolfia serpentina*, its effect is exerted in addition to that of *Rauwolfia serpentina*.

Indications

Rauwiloid is the medication of choice in mild and moderate hypertension; in severe and malignant hypertension its synergistic properties are valuably employed with other medication. *There are no known contra-indications.*

Administration and Dosage

The initial dose of Rauwiloid is 4 mg. daily, given as a single dose at night, and continued until the desired effect has been attained. Maintenance dosage at 2 mg. daily can be instituted when symptomatic and objective improvement indicates, usually after one or two months.

Rauwiloid is available as 2 mg. tablets in bottles of 60 (approximately one month's treatment) and 500.

In Severe or Resistant Hypertension RAUWILOID + VERILOID

Rauwiloid + Veriloid provides the greater hypotensive effect required in severe or resistant hypertension. In this combination, consisting of 1 mg. of Rauwiloid and 3 mg. of Veriloid standard reference powder, the effect of Veriloid is superimposed upon that of Rauwiloid.

The response appears to be greater than simple summation of the two effects, pointing to synergistic potentiation. The calming influence of Rauwiloid makes it possible for more patients to tolerate Veriloid, with less likelihood of side effects.

The average dose of Rauwiloid+Veriloid is one tablet three times daily, at intervals of not less than four hours, preferably after meals. This quantity may be increased to four tablets daily, especially after the response to Rauwiloid is fully apparent.

Supplied in bottles of 100 (approximately one month's treatment) and 500.

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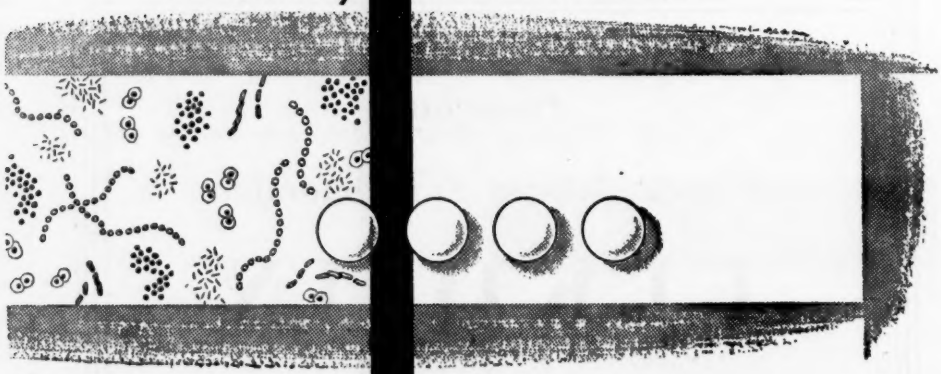

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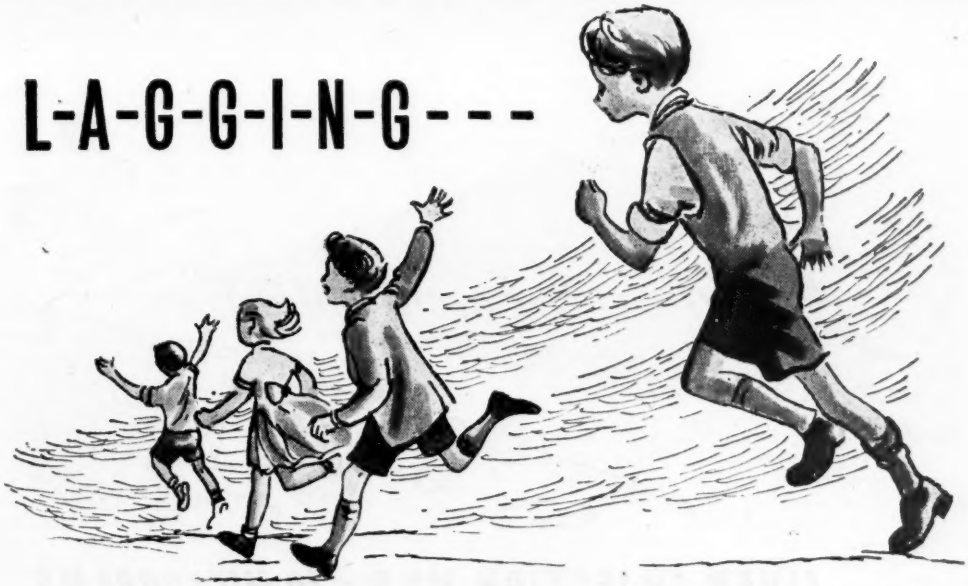

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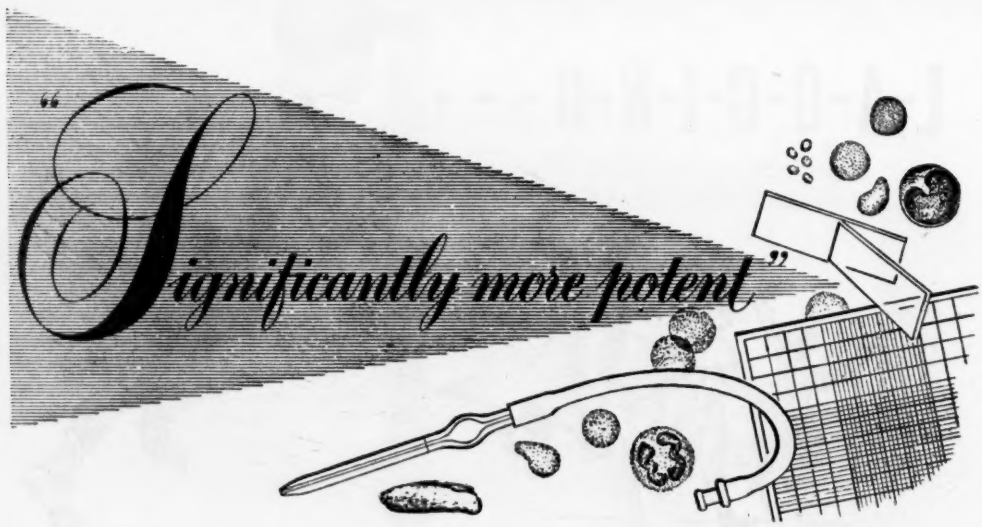

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NEUROPHYSIOLOGY

OLD AND NEW FACTS AND THEORIES *

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IN neurophysiology the last few years have brought remarkable advances in our knowledge of the process of excitation and in the study of ionic shifts and conduction in nerve-fibres. These advances have been made possible through the application of physical and engineering methods in the hands of men who, in their thoughts, were at the same time biologists, engineers, and mathematicians. Neurophysiology has always attracted those intellects having a predilection for exact measurement, mathematical treatment of the results, and the general concept of the exact scientific method.

The roots of modern neurophysiology are in the 18th and 19th centuries.

Laurens Storm van's Gravesande was probably the first biologist to recognise an action potential. He worked in the 1750s on the electric organ of *Gymnotus electricus* and saw that the discharge of this organ was of an electrical nature and that the electricity was produced by the animal. Adamson, at about the same time, was even able to lead the discharge of malapterurus off with metallic conductors (Sachs 1881).

Galvani is usually considered to be the initiator of the biophysical research in excitation. His famous experiment of Sept. 20, 1786, in which he showed that frog muscles twitch if brought into contact with metals was, however, not conclusive. Volta saw clearly that this experiment was but a demonstration of the stimulating action of extrinsic electric forces on the frog muscle. But in the summer of 1793 Galvani showed that a muscle twitch can be produced without metals, and this experiment is the basis of our knowledge of biologically produced electric potentials.

The existence and importance of what today we call "resting potential" was recognised in 1840–43 by Du Bois-Reymond and Matteucci. In 1843 Du Bois-Reymond described for the first time the negative wave —i.e., the "action potential" as a phenomenon of excitation. As early as 1849 Hering observed that the fast part in the negative wave, which today we call "spike," is followed by a slow phase, the "after-potential."

By these observations the gates were opened into a new field of research which attracted a great number of very able men. In 1850 Helmholtz succeeded in determining the conduction velocity of the nervous impulse, and in 1863 Bernstein was able to establish experimental evidence of the discontinuity of the electric change in the nerve, describing the negativity during excitation as a process propagated at conduction velocity over the nerve in the form of a wave starting from the original point of excitation. He did this by using his differential rheotome. With this instrument he was able to connect rhythmically his galvanometer, at a chosen short moment, with the nerve excited at the same frequency. By varying the phase he was able in this way to analyse the details and the spreading of the wave from the site of excitation. Also in 1863, Mateucci compared the properties of nerve with models of core conductors and showed that his models behaved in the same way with regard to electric spread as a living nerve.

In 1894 Howell, Budget, and Leonard introduced the lowering of temperature and the application of cold spots into the technique of slowing up physiological processes and for blocking impulses. Today it is not easy to be sure who first got an actual registration of the action potential. As far as I can see, Gotch and Burch, in 1897, were among the first to do so. Six years previously Waldeyer had pronounced the important conception of the neuron as a cellular entity, a theoretical concept which has had a profound influence on the thoughts of biologists in the decades to come.

The 20th century is marked by a vast increase of the number of investigators and an admirable development of physical techniques. Next to the elaborate work on action potentials and the laws of excitation, nerve metabolism and the production of heat was studied, a line of approach in which A. V. Hill has been the undisputed master. The study of impulse transmission in synapses and motor end-plates has demonstrated the rôle of acetylcholine in the case of cholinergic nerves and of noradrenaline in the case of adrenergic nerves. Otto Loewy in Austria, Sir Henry Dale and W. Feldberg in England, Walter Cannon in the United States, and Ulf von Euler in Sweden have led the way in this field in the last thirty years and thus confirmed a conception which was clearly in the mind of T. R. Elliott at the beginning of this century.

In 1912 Bernstein put forward what is now known as the membrane theory. He suspected that differences in ionic concentration play an important part in the propagation of the electrical wave along muscle and nerve fibres. This theory has received strong support in the last five years, mainly through the work of Hodgkin, Huxley, and Katz; and, although the original theory has been found to be inadequate, it has been replaced by another hypothesis in which ionic concentration differences are equally important. Radioactive tracers and sensitive chemical methods have made it possible to follow the ionic movements experimentally. Sequences of events on the ionic level, producing the action potential, appear before our eyes.

Our knowledge and the precision of our electrical instruments have made it possible to reach the molecular level of the cell machinery with regard to excitation. Where are we today? Which are the facts in neurophysiology and what has become of the old theories in the light of new discoveries?

The Structure of the Nerve-fibre

For understanding the process of conduction in myelinated nerve-fibres the structural pattern in the nodes of Ranvier is most significant. These nodes are the singular points in which excitation is produced, and until lately their structure was not clearly understood. Hess and Young (1952) have ably reviewed the known facts and have presented valuable new material.

In large mammalian fibres the node is marked by a reduction of the diameter of the axon to less than half. A cementing disc surrounds and protects the axon at the smallest diameter. This disc appears as a transverse double contour in living nerve-fibres without being a boundary. Outside the disc is a perinodal space bounded externally by the sheath of Key and Retzius. Lehmann, working in my laboratory on living single nerve-fibres, was able to show that toluidine-blue can permeate through the perinodal space and the cementing disc without affecting the production of the action potential of the node; but, as soon as the stain reaches the internal boundary between the cementing disc and the axon, the action potential changes its shape and excitation stops soon. If at this moment the stain is washed out, the action potential reappears; but if the stain is left in contact, the damage is irreversible. The conclusion may be drawn, therefore, that the excitable membrane is close to a site in the neighbourhood of the internal boundary between cementing disc and axon. Gasser (1952) has presented electron-microscopical images from which he has concluded that small bodies resembling or being mitochondria are particularly dense in the vicinity of the node. From the staining experiments of Lehmann it seems possible that these mitochondria play an important rôle in those chemical reactions which are related to the production of the action potential in the node.

* The Ciba Foundation Lecture for 1953, given in London on Oct. 29.

The question how the ionic shifts of excitation, and the polarisation of the excitable membrane at rest, are maintained as regards energy supply is very acute today. We know that this extremely small area—the node of Ranvier—is able to produce more than 100 action potentials per second without showing any signs of fatigue over a long period of time. We wonder how the necessary free energy is made available to the excitable membrane for such an expenditure—even if the amount necessary for every single excitation is extremely small. We have as yet no answer to this question. The assumption that the internode is a store of chemical energy, available to the excitable membrane at the node, must be regarded as an attractive hypothesis which needs experimental proof.

Of late years there has been some discussion on whether the central nervous system contains nodes of Ranvier or not. Recently Hess and Young (1949), Huxley and Stämpfli (1949), Feindel, Allison, and Weddel (1948), Hess and Young (1952), Allison and Feindel (1949), and Bodian (1951) have made it clear that nodes are present, although they are not similar to those found in peripheral nerves. On central fibres of 3–15 μ diameter, the nodes are spaced at intervals of from 300 to 1700 μ and the interval increases in proportion to the diameter of the fibre. In newborn rabbits the smallest central fibres have internodes of about 200 μ. These findings confirm the belief that conduction in myelinated fibres of the central nerve system does not differ much from conduction in peripheral nerves. The staining properties of these nodes suggest that they are spots of high permeability.

Excitation and Conduction

Lillie suggested in 1924 that there was a difference in the mechanism of conduction between non-myelinated and myelinated nerve-fibres. He thought that local circuits might act at a considerable distance ahead of the active region and he built a steel-wire model in which the internodes were represented by glass tubes fitted over the steel wire and interrupted with a regular spacing (" nodes "). Erlanger and Blair in 1934 obtained the first experimental evidence for what they called saltatory transmission of the nervous impulse. Erlanger wrote in 1937 :

> " And it would appear that all of the results we have depicted in nerve are entirely compatible also with progression of the excited state in jumps from node to node. But if progression in nerve is from node to node, and in the manner just described, it would have to be accomplished through restimulation by eddy currents flowing from node to node outside of the segments, just as happens in the segmented iron-wire model. As a matter of fact the segments give the impression of being insulated, isopotential cells with constricted ends consisting possibly of semipermeable partitions in contact at the nodes."

Since then, new and very strong evidence for saltatory transmission has been produced, mainly by Tasaki and Takeuchi in 1941 and 1942. The final and decisive experimental proof was brought about by the combined work of Andrew Huxley and Robert Stämpfli working together in Cambridge and in Berne (Huxley and Stämpfli 1949). Bullock, reviewing this work in 1951, wrote :

> " Today it is necessary to say that our gross picture of conduction in myelinated fibres has been more radically altered by one saltation than by the progress of several previous decades. Huxley and Stämpfli have obtained elegant direct evidence of the most telling kind that the earlier suggestions (of saltatory conduction) were correct."

Some others who have contributed further evidence for saltatory conduction in 1952–53 have shown a slight tendency to consider their own contribution as a " final proof." Certainly it is very satisfying when an important new finding is confirmed by other workers, who do not belong to the group ; and psychologically it is understandable that each ally joining the combat at a later stage has the feeling that he was the one who decided the battle. But it is the task of the historian to put things back into the right order, and from this point of view the book of Tasaki (1953), the review of Stämpfli (1952b), the paper of Hodler, Stämpfli, and Tasaki (1952), and the review of Frankenhaeuser (1952a) deserve special attention.

We know today that the node is the only place where a myelinated fibre can be excited (Tasaki 1939), and, where a self-sustained membrane current is flowing, in single isolated nerve-fibres this can be shown with adequate electrodes of the bridge-insulator, oil-gap, or air-gap type. Recently this fundamental observation has also been proved on the intact nerve-trunk (Stämpfli and Zotterman 1951, Lussier and Rushton 1952, Frankenhaeuser 1952b), where only the epineurium had been stripped. The node is the only site where excitation takes place, and it is only at the node that inward-flowing membrane currents have been observed (Huxley and Stämpfli 1949, Stämpfli 1952a, Frankenhaeuser 1952b). If a myelinated single nerve-fibre is excited close to the node and then at a distance, the curves representing strength-latency relations are different. Both for brief and long stimulating pulses, longer latencies were observed when the stimulating electrode was located further from the node. This difference is related to the speed of the potential wave of the stimulus from the site of stimulation along the myelinated portion of the nerve-fibre to the neighbouring node (Tasaki and Mizuguchi 1948). This spread occurs at a finite rate and the rising phase of the action current is retarded continuously with increasing distance of the recording electrode from the proximal node. This fact is ascribed to the distributed capacity of the myelinated portion of the nerve-fibre. Action currents flowing through the axis cylinder, and action potentials recorded from the surface of the nerve-trunk, show a difference in time course which is due to this distributed capacity. The retardation of the action potential of a conducted nerve impulse increases continuously with the distance from the node at relatively high temperature (20°C). The velocity of conduction of the impulse is determined to a major extent by the rate of spread of the potential wave along the internode, with its distributed capacity. At low temperatures, however, it is probable that the rate of movement of sodium and potassium ions at the nodal membrane is the main factor determining time-lag and hence conduction velocity. In the node the steepness of the rising phase of the action potential shows a maximum (Hodler, Stämpfli, and Tasaki 1952, Stämpfli and Zotterman 1951, Frankenhaeuser 1952b), and it drops to a minimum between nodes. The variation in steepness is greater than 1 in 3. The active change in electromotive force across the excitable membrane of the myelinated fibre takes place only at the node, and the potential wave spreads with finite velocity along the myelinated sheath of the internode. Nervous conduction in the myelinated fibre differs considerably from conduction of the activation wave in Lillie's model, where the steel wire was protected by glass tubes and where there was no leakage. Leakage of current through the myelinated sheath in the nerve-fibre is important, but the current density and the intensity of the electric field through the nodal membrane is much greater than that in the myelinated sheath. Another aspect of saltatory conduction presents the study of rheobase and chronaxy on single nerve-fibres. The chronaxy of the node is extremely low and can attain values of as little as 47 μ sec. (Sakamoto 1933). In the internode the measured chronaxy is high. If the testing electrode is displaced along the fibre, the chronaxy decreases linearly by approaching a node and increases after passing of the node. This increase occurs with a jump, to a maximum if the gap method is used, because

now the cathode is on the side of the next node and the anode on the side of the node which has just been passed by the electrode (Hodler, Stämpfli, and Tasaki 1952).

Additional evidence of saltatory conduction in myelinated nerve-fibres can be derived from the photochemical experiments on single myelinated nerve-fibres with ultraviolet light (Booth, von Muralt, and Stämpfli 1950, von Muralt and Stämpfli 1953). The node is extremely sensitive to ultraviolet of wave-lengths less than 300 mμ, but the internode is insensitive and shows no specific reaction with regard to wave-length of the radiation used, as does the node. The photochemical-activity curve of the resting node was determined and shows three maxima at 265, 280 and 297 mμ. The internode shows no such effects and the activity curve is simply a curve with end absorption in the short wave-lengths. It is therefore obvious that, in the node, special chemical events are closely linked with the maintenance of the resting potential. What happens in an excited node? This problem has been studied by the new method of stroboscopic photochemistry. If monochromatic ultraviolet light of 265 mμ is used in short flashes for irradiation, and if the flashes are synchronised with respect to frequency and phase with the excitation of the node, the irradiation is five times more active than if the flashes fall into the interval between two excitations. This interesting phase effect of intermittent, synchronised ultraviolet light is regarded as a proof for two statements:

1. Chemical events are occurring in the node at the moment of excitation. Excitation is closely linked to chemical events occuring synchronously or very close to it.

2. The reactions are very specific, because only the light which is specifically absorbed by compounds like adenosine-triphosphate, thiamine, or nucleic acids is active.

Membrane and Ionic Transfer

The membrane theory of excitation, which goes back to Bernstein's original conception published in 1912, centres around an invisible structure. But the fact that potassium ions can diffuse freely within the axon, and that there is an extremely slow exchange of ions between inside and outside, is reliable evidence of a surface barrier. The fact that at any given level of the axon no measurable potential differences are encountered is a proof that the resting potentials and the action potentials are developed wholly across the surface membrane.

The membrane potential and its direct measurement can nowadays be studied with the aid of an electrode inserted into the interior of a cell. This method was first employed in plant cells by Osterhout in 1931. On nerve the earliest experiments were made with the squid, loligo. A long capillary electrode is introduced into one end of a fibre and pushed in for a distance of 10–30 mm. Damage occurs only at the point where the capillary-electrode enters, but an insertion of 10 mm. is sufficient to reach intact portions of the nerve. The presence of the internal electrode has no effect on the activity of the nerve and impaled axons can survive for many hours, as Hodgkin and Huxley showed in 1945. Another method, developed in Gerard's laboratory in Chicago, depends on the fact that a very small electrode can be inserted transversely into many types of fibres without causing damage. Electrodes with a tip diameter of less than 0·5 μ penetrate without difficulty and without changing the membrane potential (Nastuk and Hodgkin 1950). An ingenious method of measuring the absolute values of the resting potentials and the action potentials in myelinated nerve has been described by Huxley and Stämpfli (1951). The demarcation current between the studied node and the depolarised node is balanced by an electromotive force applied across an insulating partition. The criterion for balance is that there shall be no current through a second insulating gap, placed in close proximity to the first. If balance is established, the external electromotive force must be nearly equal to the membrane potential. Keynes and Martins-Ferreira (1953) have measured the membrane potential in the electroplates of the electric cell and have found conditions which deserve special attention. Across both faces of the electroplate there is a resting potential of the same size as observed in other excitable tissues. During activity a large reversed action potential develops only across the innervated face, while the potential across the non-nervous face of the electroplate remains virtually unaltered. The reversed potential is thus added to the unaltered potential, and each electroplate contributes during activity a voltage equal in size to its action potential. The nervous face is very sensitive when changing the sodium content of the surrounding solution, and treatment with sodium-free solutions abolishes the action potentials, without affecting the resting potential. The non-nervous face is insensitive to sodium-free solutions. Potassium, however, depolarised both faces of the electroplate. Keynes and Martins-Ferreira make a very interesting suggestion with regard to the origin of electroplates. They think that they are specially adapted muscle-fibres and not modified motor end-plates as has hitherto been assumed.

* * *

Thus the study of the electric organ, begun in 1750 by Laurens Storm van's Gravesande, has revealed, two hundred years later, the full importance of the modern theory of ionic transfer. Old and new facts and theories are blended together; our knowledge advances; but our respect and admiration for Nature's wonders remain unaltered.

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"... Language is a subtle sort of harness with which we pull ideas about. Take the English personal pronoun, first person singular. The word *me* connotes the summation and end result of all that has happened to me, all that I have received, experienced, suffered up till now: that's *me*. The word *I* connotes freedom from all that, freedom to choose, the forward look, the right to challenge and even to depart from the very influences that have produced the *me*. The nominative *I* suggests a sort of continuous rebirth and freshness. It is *I* that hopes: it is the overwhelmed *me* that despairs. *I* stands like a small Statue of Liberty, expectantly facing the future. It is the subject of the verb, not the object; the active agent, not the passive recipient. It is in the nominative case; not in the objective. Now here comes a queer item in the English language. When we speak to others directly, we no longer use the nominative case (*thou* or *ye*) that implies freedom and choice, but we put them in the objective case (you), as though they were not free but always on the receiving end. *I* dish it out: *You* take it. In the olden, gracious days we had *thou* and *ye* as the nominatives, implying and so reminding those whom we addressed of their independence."—Dr. ALAN GREGG, *Amer. Rev. Tuberc.* 1953, **67**, 517.

THE RELATION OF MYOPIA TO GROWTH

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As myopia commonly has its onset in childhood I have investigated the association of changes in refraction with changes in height and weight. In girls the date of menarche was also considered in relation to refractive errors.

Method and Material

The children investigated were attending a school ophthalmic clinic, and their selection must be described.

At regular intervals from the time of school entry until he leaves, every child has his vision examined by a trained nurse. Any whose acuity does not come up to the standard of 6/6 in each eye is referred to the ophthalmic clinic. Furthermore, any who complain of symptoms or whom the teacher considers to be in some difficulty are also referred to the clinic. About nine out of ten of the children attend as a result of the "screening" test at they are at school. It was therefore possible to analyse the ophthalmic records and by age and sex to correlate changes in height and weight with the ocular conditions found.

No attempt was made to define the absolute incidence of refractive errors, because it was impossible to separate the ophthalmic records over the years so that they could be related to any given school population. However, a survey was made of a random selection of patients attending the school clinic.

This selection was made by examining all the records as they were filed in alphabetical order. All the cases had been examined by retinoscopy under cycloplegia, but the refractive assessment was based on the glasses ordered or tried and not on the retinoscopy findings as such. Since this method of assessment is not accurate for emmetropes and hypermetropes, these two groups were combined in tabling the results under the heading of "others." This was an additional reason for not attempting to find the absolute frequency of any particular refractive error. The reason for this method of assessment was that the children had been examined at different times by three ophthalmologists, and their retinoscopy findings differed somewhat; but there was general agreement on the glasses eventually ordered for myopes. I myself at one time or another examined all the children.

TABLE I—WEIGHT AND HEIGHT LEVELS IN MALE MYOPES AND OTHERS AGED 3–16

Age (yr.)	No. weighed		Mean weight (lb.)		No. measured		Mean height (in.)	
	Myopes	Others	Myopes	Others	Myopes	Others	Myopes	Others
3–5	39	77	45·0	43·0	39	87	42·5	42·1
6–7	20	18	51·5	49·0	21	19	46·3	46·6
8–9	50	67	64·0	58·5	51	74	50·8	49·5
10–11	33	32	78·0	72·0	36	37	54·6	53·7
12–13	28	24	94·5	81·5	30	25	59·3	57·5
14	22	24	117·0	103·5	22	24	63·5	61·6
15–16	19	10	130·5	128·5	19	11	67·3	67·4
Mean for 6–14	..	..	78·5	69·5	..	..	54·4	52·8

school, and therefore the total presents a high proportion of random cases. Exactly the same procedure is used for boys and girls. It is therefore unlikely that any myope will be missed, and it is seldom that the child's parents neglect to bring him for examination.

Once a child has attended the clinic he is sent for annually or more often for re-examination unless his eyes are completely normal. Thus a comprehensive ocular case-record is compiled which is available for inspection at any time. In addition to this all school-children have the usual regular general physical examinations while

TABLE II—STATISTICAL ANALYSIS OF DIFFERENCES FOUND BETWEEN MEAN HEIGHTS AND WEIGHTS OF MALE MYOPES AND OTHERS AGED 6–14

Age (yr.)	S.D. myopes	S.D. others	S.E. of diff.	Obs. diff.	O.D./S.E.
			Height		
8–9	2·6	2·4	0·45	1·3	2·9
12–13	3·8	3·4	0·975	1·8	1·8
6–14	6·1	5·5	0·63	1·6	2·5
			Weight		
10–11	12·8	8·2	2·64	6·0	2·2
6–14	26·0	19·5	2·56	9·0	3·5

TABLE III—MEAN WEIGHTS OF JEWISH BOYS

Age (yr.)	Mean weight	
	Myopes	Others
3–5	42·2	44·2
8–9	66·8	63·0
10–11	82·5	73·0
12–13	100·0	91·0
14	98·0	97·0

TABLE IV—PROPORTIONAL RATE OF GROWTH PER ANNUM OF MYOPIC AND OTHER BOYS

Age (yr.)	Proportional weight change per annum		Proportional height change per annum	
	Myopes	Others	Myopes	Others
3–7	0·035	0·035	0·022	0·027
6–9	0·080	0·063	0·032	0·021
8–11	0·073	0·077	0·025	0·028
10–13	0·070	0·043	0·029	0·024
12–14	0·125	0·105	0·039	0·035
14–16	0·060	0·090	0·029	0·047

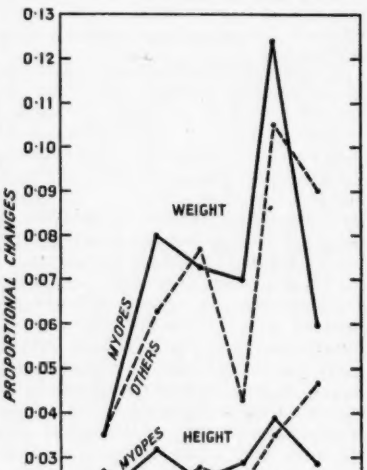

Fig. 1—Proportional rate of growth per annum in weight and height of myopic and other boys.

From the general medical records it was possible to prepare tables showing the mean heights and weights of myopes and others, and to subdivide them by sex and age. Unless otherwise stated, the heights and weights I shall give for myopes are those registered throughout their medical history, regardless of the age at which they became myopic. In other words, once a myope always a myope, even retrospectively.

In calculating the refractive error, the spherical errors in both eyes were added together, and half the total cylindrical error, if any, was added to this sum. Half the total was taken to represent the amount of myopia

TABLE V—WEIGHT AND HEIGHT LEVELS IN FEMALE MYOPES AND OTHERS AGED 3–16

Age (yr.)	No. weighed		Mean weight (lb.)		No. measured		Mean height (in.)	
	Myopes	Others	Myopes	Others	Myopes	Others	Myopes	Others
3–5	46	85	42·0	43·5	43	84	42·8	42·3
6–7	15	27	51·0	51·0	13	30	46·5	46·0
8–9	52	86	61·5	61·0	47	89	50·2	50·3
10–11	51	63	81·5	78·5	51	67	55·8	55·4
12–13	58	38	92·0	97·5	47	40	59·0	59·0
14	55	40	109·5	110·0	51	42	62·2	62·5
15–16	42	26	125·0	117·5	39	24	64·0	62·9

TABLE VI—PROPORTIONAL RATE OF GROWTH PER ANNUM IN FEMALE MYOPES AND OTHERS

Age (yr.)	Proportional weight change per annum		Proportional height change per annum	
	Myopes	Others	Myopes	Others
3–7	0·052	0·042	0·022	0·022
6–9	0·070	0·067	0·027	0·031
8–11	0·107	0·093	0·037	0·034
10–13	0·047	0·080	0·019	0·022
12–14	0·090	0·060	0·027	0·028
14–16	0·075	0·085	0·015	0·003

existing in the child at that particular examination. This method was devised to overcome the difficulty of differing refractive errors in the two eyes.

The date of the first menstrual period was recorded, and the girls were divided into those whose menarche was early (12 years or under), average (13 and 14), or late (15 or over). The proportion of myopes falling into each group was compared with the proportion in the control group of emmetropes and hypermetropes.

The rate of change of the myopic process was correlated with age, sex, growth, and the menarchal age.

The weight/height ratio was also calculated at different ages in each sex.

The total number of myopes studied was 418, of whom 296 were girls and 122 boys. A comparable number of controls was used.

Results

Table I shows the results obtained among the boys. The means for the ages 6–14 were used because the numbers in each age-group in this range were approximately equal in the two groups. Further to discount any effect the age-distribution might have had on the differences found, and to eliminate possible statistical errors caused by the fact that many children appear several times at different ages in this table, the standard error of the difference of the means was calculated separately for the ages 8–9 and 12–13 from the figures for their mean height, and for the ages 10–11 from the figures for their weight. These are shown in table II together with the standard errors of the differences found in the whole age-range 6–14 both for weight and height.

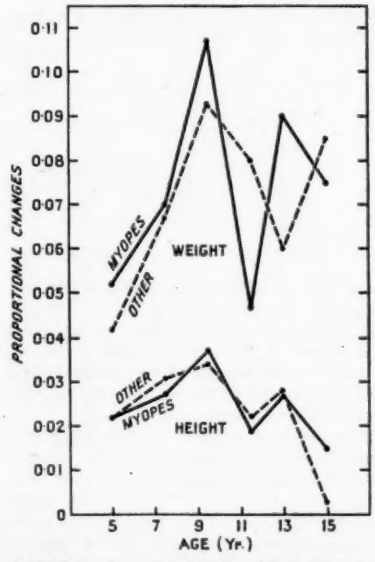

Fig. 2—Proportional rate of growth per annum in weight and height of myopic and other girls.

If twice the standard error is taken to be the test of significance, all the differences calculated are statistically significant except for the age-group 12–13, which is on the borderline.

The population of the neighbourhood in which this investigation was undertaken contains a proportion of Jews. It was thought that, as Jews are a more myopic people than many others, the changes in growth found might also be due to this racial factor. Accordingly a separate estimation of the growth of Jewish children was made (table III).

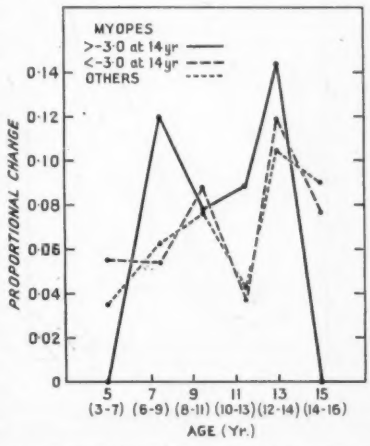

Fig. 3—Proportional rates of growth per annum in weight of boys with different degrees of myopia and of other boys.

These results show that Jewish myopes are heavier, age for age, than other Jewish boys. There were 24% of Jewish boys among the total of myopes, and 14% of the others were Jewish. As Jewish boys show similar differences in weight between myopes and others, it was considered that the difference in the incidence of myopia among Jews would not influence the main conclusion that myopes are heavier, age for age, than others. That this is due to the rate of growth is shown in table IV and fig. 1.

In the main these results agree well with the ones cited later for the girls. The boys show a clearer chronological difference in growth levels and changes than do the girls (tables V and VI), but fig. 1 shows the same retardation in the rate of growth of boys in the control group compared with those that are myopic. Also the peaks are

TABLE VII—WEIGHT AND HEIGHT LEVELS IN HIGHER AND LOWER DEGREES OF MYOPIA BETWEEN THE AGES OF 3 AND 16

Age (yr.)	Myopes over −3·0 at 14		Myopes under −3·0 at 14		Others
	No.	Mean weight (lb.)	No.	Mean weight (lb.)	Mean weight (lb.)
3–5	9	50·0	13	45·5	43·0
6–7	6	50·0	8	55·5	49·0
8–9	21	68·0	21	64·0	58·5
10–11	10	84·0	4	81·0	72·0
12–13	10	106·5	24	90·0	81·5
14	5	137·5	18	111·5	103·5
15–16	8	137·5	15	128·5	128·5
Av. of means		90·5	..	82·3	76·6
		Mean height (in.)		Mean height (in.)	Mean height (in.)
3–5	13	45·0	12	42·3	42·1
6–7	6	47·7	7	46·1	46·6
8–9	21	52·6	18	50·6	49·5
10–11	11	56·1	6	55·3	53·7
12–13	10	61·3	25	58·3	57·5
14	5	67·4	16	62·6	61·6
15–16	8	68·5	14	66·6	67·4
Av. of means		56·9	..	54·5	54·1

not quite so high in the control group as in the myopes. Table VI is put into graphic form in fig. 2. Although there is very little difference in the mean heights and weights shown in table V, fig. 2 shows quite clearly that there is a similarity in the rate of growth in the two groups, but that the myopes are accelerated and the peaks and depressions are exaggerated, particularly in the way the weight changes.

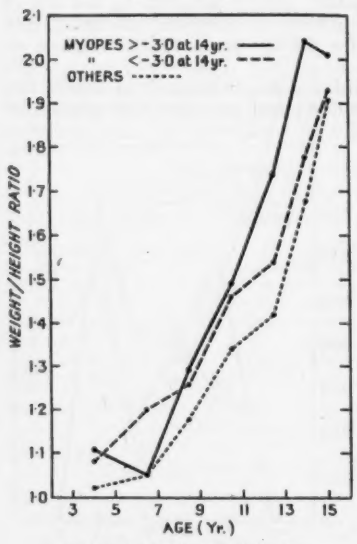

Fig. 4—Weight/height ratio in boys.

To elucidate this finding, the myopes were divided into those more than —3·0 D myopic at the age of 14 and those less than —3·0 D at that age. The heights and weights of these two groups are shown with controls in table VII, and the proportional rate of change in weight in fig. 3.

This table shows that all myopes are both heavier and taller than others, and that the more myopic they are the more pronounced is their difference in physique at any given age.

Table VIII shows the weight/height ratios in the same categories as table VII. These are expressed graphically in fig. 4. Tables VII and VIII are both consistent. The higher myopes are shown to be heavier in proportion to their height than the others at each age. This is probably an expression of earlier maturity, since the graphs show that the other two groups are growing faster at the ages from 14 onwards and catching up with the higher myopes.

TABLE VIII—MEAN WEIGHT/HEIGHT RATIOS IN DIFFERENT DEGREES OF MYOPIA

Age (yr.)	Myopes over —3·0 at 14	Myopes under —3·0 at 14	Others
3–5	1·11	1·08	1·02
6–7	1·05	1·20	1·05
8–9	1·29	1·26	1·18
10–11	1·49	1·46	1·34
12–13	1·74	1·54	1·42
14	2·04	1·78	1·68
15–16	2·01	1·93	1·91
Av. of means ..	1·53	1·46	1·37

Fig. 3 shows an interesting feature in that those with lower degrees of myopia show a bigger swing than the controls in their rate of growth, and those with higher degrees of myopia show a generally increased rate of growth except at the extremes of the ages examined. Perhaps the figures at each extreme are too small for accurate measurement among those with higher degrees of myopia.

TABLE IX—MEAN HEIGHTS AND WEIGHTS OF MYOPIC BOYS MORE THAN A YEAR BEFORE MYOPIA WAS FIRST NOTICED

Age (yr.)	Mean weight (lb.)		Mean height (in.)		Weight/height ratio	
	Future myopes	Others	Future myopes	Others	Future myopes	Others
4–5	47·5	43·0	43·1	42·1	1·12	1·02
6–7	52·0	49·0	46·0	46·6	1·13	1·05
8–9	60·0	58·5	50·0	49·5	1·20	1·18
10–11	81·0	72·0	54·3	53·7	1·49	1·34
Av. of means ..	60·1	55·6	48·3	47·9	1·23	1·15

TABLE X—DATE OF MENARCHE IN MYOPES AND OTHERS

—	Early (less than 13)	Middle (13–14)	Late (more than 14)
Myopes more than —1·00	35 (32·1%)	51 (46·8%)	23 (21·1%)
Others and myopes less than —1·00	20 (14·5%)	81 (57·8%)	39 (27·7%)

$\chi^2 = 10{\cdot}3$, $P < 0{\cdot}01$.

Fig. 4, showing the weight/height ratios in the different groups, indicates a clear difference in the growth of these boys between the ages of 8 and 14. The control group and those with lower degrees of myopia grow more slowly than those with higher degrees of myopia.

The two former groups show a check in the even progress of increase in the weight/height ratio which is not shown by those with higher degrees of myopia, between 10 and 13. The significance of this is obscure, but it is a clear difference between the myopes and the rest.

TABLE XI—WEIGHT AND HEIGHT LEVELS IN MYOPES AND OTHERS AT EACH MENARCHAL YEAR FROM —3 to +3

Year	No.		Mean weight (lb.)		No.		Mean height (in.)	
	Myopes	Others	Myopes	Others	Myopes	Others	Myopes	Others
—3	20	33	81·5	80·2	22	33	56·9	57·2
—2	37	45	90·9	87·8	36	45	58·8	59·8
—1	29	48	93·0	95·2	30	44	60·5	60·7
0	77	75	112·6	110·0	76	74	62·8	62·4
+1	32	45	110·1	109·6	41	46	62·6	63·4
+2	44	27	124·5	118·8	45	28	63·9	63·6
+3	24	23	125·5	123·6	24	23	63·5	63·6

To find out whether the growth changes come before the onset of myopia a table was prepared showing the mean heights and weights of myopic boys a year before they first reported as myopes. It is impossible to date the onset of myopia without examining all children at regular and short intervals. However, figures taken up to a year before attendance at the eye clinic would only include a very few actual myopes. These figures are shown in table IX. These figures show that boys who are going to become myopic are already heavier and slightly taller than others a year before their myopia is noticed.

TABLE XII—WEIGHT/HEIGHT RATIOS IN MYOPES AND OTHERS AT EACH MENARCHAL YEAR FROM —3 TO +3

Year	Weight/height ratio	
	Myopes	Others
—3	1·43	1·40
—2	1·53	1·47
—1	1·54	1·57
0	1·79	1·76
+1	1·76	1·73
+2	1·95	1·87
+3	1·98	1·94

In girls there was a significant difference in the dates of the menarche between myopes and others (table X). If the menarchal age is used instead of the chronological age, a clear picture of growth differences between myopes and others emerges (tables XI and XII).

Thus at all menarchal ages except —1 the weight of myopic girls exceeds that of the others, and the weight/height ratio is consistently higher in myopes also with the exception of age —1. Fig. 5 shows the proportional increase in weight year by year. Although myopes show exactly the same pattern of fluctuation in the rate of weight increase year by year, the swing in each case is accentuated compared with the others. This result taken

together with the previous findings shows that the growth of myopes appears not only to be faster on the average but also more irregular than the growth of children with normal eyes.

Figs. 6 and 7 show these figures correlated with weight and height changes. There is a remarkable similarity both in the boys and girls between the rates of growth and the rates of change in myopia. These are all, of course,

TABLE XIII—PROPORTIONAL RATE OF CHANGE OF MYOPIA RELATED TO AGE

Age (yr.)	Males		Females	
	No.	Proportional change	No.	Proportional change
7–9	31	0·715	32	0·42
9–10	34	0·58	34	0·73
10–11	34	0·367	50	0·485
11–12	35	0·33	59	0·33
12–13	40	0·39	74	0·44
13–14	33	0·31	35	0·23
14–15	21	0·14	45	0·18
15–16	16	0·085	24	0·155
Av. of means	..	0·365	..	0·371

proportional changes. The spurt in growth round about the age of 13 in both sexes is accurately reflected in the rate of increase in myopia at this age in both sexes.

Discussion

This report has been designed to compare the rates of growth of myopes and of others—not to elaborate an absolute standard of values of growth or changes in refraction. Hence there is no need to explain in detail the slight peculiarities in the actual shape of the growth curves, because they are common both to the myopes and to the others.

A possible explanation of the peculiarities compared with other standard curves is that the population was not homogeneous over the whole age-range examined. At 11 there is a redistribution of school-children into different schools, and certain schools not previously within the ambit of the school ophthalmic clinic then come under supervision.

This may well, for reasons of economic or nutritional status and background, alter the absolute shape of the curve but in no way alters the comparison between the myopes and the others.

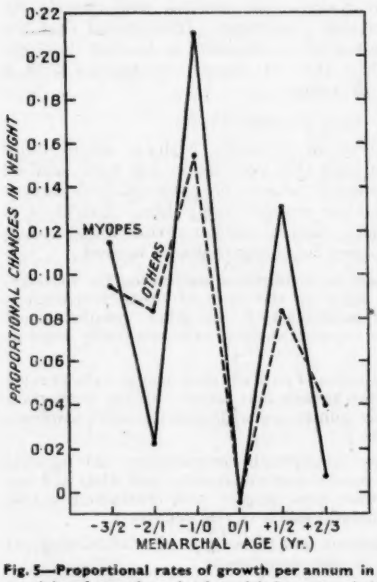

Fig. 5—Proportional rates of growth per annum in weight of myopic and other girls by menarchal age.

It must be emphasised that the vast majority of the myopes in this study were below —6·0 D, and therefore there is probably no connection between their accelerated growth and the size of their eyes (Tron 1935). Discussion on a possible connection between the rates of physical growth and the refraction of the eye would be largely speculative, and further research into this is being undertaken.

Further statistical analysis of the weight and height ratios may throw some light on the relative importance of each of these two elements in growth.

Summary

A series of myopes and non-myopes were examined and their rates of growth compared.

The rate of growth of myopic children differs from that of others, being in the main faster both in height and weight.

In myopic girls the menarche is earlier in a significant proportion of cases, and the rate of growth appears to fluctuate more than in other children.

There is a correspondence between the rate of progress of the myopia and rate of growth.

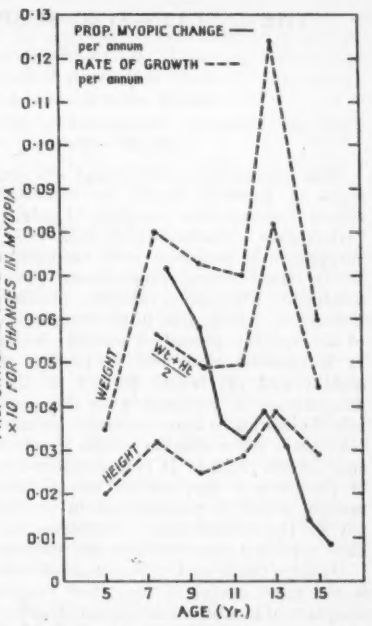

Fig. 6—Relation of rate of myopic change to growth in boys.

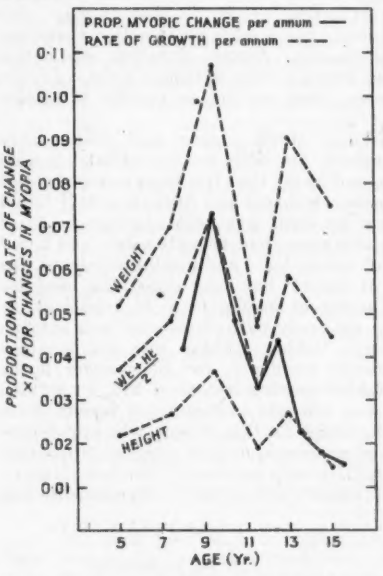

Fig. 7—Relation of rate of myopic change to growth in girls.

I am grateful to Dr. Philip Evans, of the department of child health, Guy's Hospital, and to Dr. J. M. Tanner, of the Sherrington school of physiology, St. Thomas's Hospital, for having thrown some light on the peculiarities in the growth curves.

I also want to express my thanks to Dr. A. F. Adamson, medical officer of health area 4, Middlesex, for placing his records at my disposal; and to his staff for their coöperation.

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THE INSULIN-ZINC SUSPENSIONS

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THE insulin-zinc suspensions are long-acting preparations of purified insulin in acetate buffer with zinc (Novo Laboratories' insulins 'Lente,' 'Semilente,' and 'Ultralente') (Hallas-Møller et al. 1951, 1952). When the suspension is prepared with amorphous insulin, a relatively short-acting preparation (insulin semilente) is produced, whereas crystalline insulin produces insulin ultralente, which acts much longer, and a 3/7 mixture of amorphous/crystalline insulin produces insulin lente. It is claimed that the properties of the amorphous insulin and crystalline insulin in the mixture remain unmodified, in contrast with the partial conversion of soluble insulin to longer-acting insulin which is known to take place when soluble insulin is mixed with protamine zinc insulin (P.Z.I.). It is impossible to shorten the action of insulin-zinc suspensions by admixture with soluble insulin, which is precipitated in crystalline form at the pH of the suspensions. Nabarro and Stowers (1953) have reported their preliminary studies on this problem.

Oakley (1953a and b) has pointed out that insulin lente is the most useful of the three preparations, and that the place of insulin ultralente and insulin semilente has not yet been established; he further suggests that, if insulin ultralente proves to have a duration of action similar to that of P.Z.I., and insulin semilente an action similar to that of globin zinc insulin, the two older preparations might be withdrawn from the market to lessen the confusion resulting from too many insulins. Gerritzen (1953) has now shown that insulin ultralente has a duration of action similar to that of P.Z.I., but that insulin semilente has a more rapid action than that of globin zinc insulin, whose duration of action corresponds more nearly to that of insulin lente. Insulin semilente, however, does not act so rapidly as soluble insulin.

Murray and Wilson (1953) suggest that insulin lente and insulin ultralente are both worthy of introduction into general use, and imply that the same cannot be said of insulin semilente. Nabarro and Stowers (1953) found that insulin lente by itself was unsatisfactory in 10 of 19 patients requiring more than 48 units a day, and found that a mixture of insulin lente and insulin ultralente was necessary in 8 of these; but they noted the need for shortening the action of insulin lente in 1 patient, in whom control in the early part of the day was unsatisfactory. Although Oakley (1953a) does not mention the need for insulin semilente, the blood-sugar levels in case 5 in his table I (fasting 200, noon 375, 6 P.M. 260, 9 P.M. 255 mg. per 100 ml.) indicate that insulin lente was too slow in its action for this patient, who apparently needs an insulin-zinc suspension with a higher proportion of amorphous insulin (insulin semilente). Similarly Murray and Wilson (1953) found a mixture of insulin semilente and insulin lente to be necessary in their case 21 (reported in their addendum), and perusal of their table II suggests that their case 4 falls into the same category (fasting blood-sugar level 168, forenoon 256, noon 76, afternoon 82 mg. per ml.). These findings are summarised in table I.

TABLE I—DURATION OF ACTION OF INSULIN LENTE

Authority	No. of patients			
	Total	Needing insulin semilente	Needing insulin ultralente	Needing insulin lente
Oakley (1953a)	11	1 (case 5)	0	10
Murray and Wilson (1953)	23*	2 (cases 4 and 20)	3 (cases 21, 23, and 26)	18
Nabarro and Stowers (1953)	21	1	8	12
Total	55	4	11	40

* In 5 of the 28 cases in their table I data on insulin lente alone are not given.

The need for varying the proportions of amorphous insulin and crystalline insulin in insulin-zinc suspensions was first predicted by Hallas-Møller et al. (1951, 1952), who emphasised that the duration of action of any insulin preparation will vary considerably from one diabetic patient to another, and grouped their patients accordingly into A, B, and C reaction types requiring different types of insulin-zinc suspension. Further study is clearly needed to define the extent of variation likely to be found and the proportions likely to be most useful in relation to dietary habits in this country.

These above-mentioned studies also indicate that in some patients a change-over to a similar dose of insulin-zinc suspension leads to an increase in glycosuria—i.e., the dose of insulin-zinc suspension required may be greater than the dose of the previous insulin preparation: apparently only 2 patients needed a smaller dose (table II).

Up to now there have been no reports of local allergic reactions to insulin-zinc suspensions, which seem to be superior in this respect to previously available long-acting insulins. Clinical experience so far suggests that the control of diabetes with insulin-zinc suspensions is more even and less variable than control with previously available preparations. Gerritzen (1953) noted that the hypoglycæmic action of insulin lente in healthy students was smoother than that of other preparations with a similar duration of action.

TABLE II—DAILY DOSAGE REQUIREMENTS OF INSULIN-ZINC SUSPENSIONS IN COMPARISON WITH PREVIOUS INSULIN DOSAGE

Authority	No. of patients		
	Total	Needing higher dose	Needing smaller dose
Oakley (1953a)	11	0	0
Murray and Wilson (1953) ..	28*	3 (cases 17, 23, and 25)	0
Nabarro and Stowers (1953)	15	8	2
Total	54	11	2

* As not all of these 28 patients were finally stabilised satisfactorily, it is possible that the number needing a larger dose may have been greater than 3 out of 28.

The Present Study

The management of diabetes with a single daily injection of an insulin-zinc suspension has been studied in a group composed largely of patients with severe diabetes leading their normal daily life. Evidence is provided which may help to answer certain outstanding questions, which may be summarised as follows:

(1) Is the dose of an insulin-zinc suspension (or mixture) likely to be the same as the dose of other preparations previously found satisfactory? In what proportion of patients is the dose required likely to be substantially larger or smaller?

(2) In what proportion of patients does insulin lente provide adequate control for twenty-four hours? What proportion are likely to require admixture with either insulin semilente or insulin ultralente?

(3) What dietary arrangement is necessary for patients being treated with insulin-zinc suspensions, and what mixture or mixtures of amorphous insulin and crystalline insulin are likely to be generally useful in this country?

(4) What precautions are necessary in restabilising an outpatient on insulin-zinc suspensions?

(5) Do insulin-zinc suspensions provide a measure of control better than that previously possible?

TABLE III—AGE-DISTRIBUTION OF PATIENTS

Age-group (yr.)	11–20	21–30	31–40	41–50	51–60	61–70	70+
No. of patients	2	6	14	10	6	2	2

TABLE IV—DURATION OF DIABETES

New patients	Less than 2 yr.	2–10 yr.	More than 10 yr.
3	6	27	6

THE METHODS

Inpatients

As in previous studies, the blood-sugar levels were estimated at the following times: 8.0 A.M. (fasting), 11.45 A.M., 4.45 P.M., and 9.0 P.M. In addition twenty-four-hour collections of urine were made, and the total excretion of reducing substances was estimated. Whenever treatment with an insulin-zinc suspension was compared with a previous insulin régime, three separate periods were studied on each régime.

Outpatients

Outpatients were studied personally by me and were seen by separate arrangement and not at the weekly diabetic clinic. In every case the patient was asked, as a preliminary to the trial, to produce records of tests of every specimen of urine passed during three or more separate periods of twenty-four hours, to supplement the information obtainable by isolated blood-sugar and urine-sugar estimations. The patients almost all used 'Clinitest' outfits for their own urine tests, and they were asked to pass urine before meals rather than after. Short-period urine tests were made whenever the first specimen on waking contained glucose—i.e., a second specimen of urine was tested fifteen or twenty minutes after emptying the bladder before the injection of insulin—and short-period tests were also requested from certain patients at other times to establish essential data concerning duration of action of insulin-zinc suspensions. After the patient had produced this information, further improvement in outpatient control was often found to be possible by detailed adjustment of dietary carbohydrate distribution, often combined with an increase in total insulin dosage. Total excretion of glucose was then estimated for three separate twenty-four-hour periods, during which individual tests were again made on each specimen passed. Winchester flasks with toluene to act as preservative were supplied for these collections. In those outpatients who could not make twenty-four-hour collections of urine the reliability of the patients' own urine tests was checked by random estimations of urine-sugar and blood-sugar.

The change-over to insulin lente was then made, together with a change to a new diet distribution, particularly when soluble insulin twice daily had been taken previously. As the trial proceeded, the need became apparent for certain precautions described in detail below. The patients were seen again two or three times a week until satisfactory control was achieved. It was found that the only convenient method of arranging this was to allow patients to attend at a particular time, on any day of the week, so that any unexpected difficulties could be dealt with without delay. After stabilisation on the new insulin twenty-four-hourly collections were repeated on three separate days. Finally, further check on the control achieved has usually been made by estimation of forenoon and afternoon blood-sugar levels.

TABLE V—NATURE OF PREVIOUS TREATMENT

	Insulin					
None (new patients)	4-hourly soluble insulin (post-ketosis)	P.Z.I. alone	Combined P.Z.I./soluble A.M.	P.Z.I./soluble A.M. soluble P.M.	Soluble b.d.
3	2	3	9	3	22
	Diet				
Calories ..	1500–1750	1800–2250	2300–2450	2500–2800	
Carbohydrate content (g.)	150–175	180–225	230–260	260–300	
No. of patients	5	15	13	9	

THE PATIENTS

Almost all the patients had the acute type of diabetes found in early adult life, in which there is a tendency to ketosis. The criteria necessary for therapeutic trial mentioned by Lawrence and Oakley (1953) have been adhered to whenever applicable. The data obtained from different patients have not always been adequate for answering all the various outstanding questions, and the numbers available for different parts of the study therefore vary slightly. In selecting patients for study those who had already made a habit of testing their own urine and who had a good understanding of their disease were naturally chosen in preference to those who were unlikely to learn to keep useful records of urine tests or to coöperate in other aspects of the study. Those with severe diabetes and those requiring a large amount of insulin were also chosen as being most in need of any possible improvement in treatment. Those with mild diabetes easily controlled with a small dose of any type of insulin were included only if they were clearly above the average in intelligence and in knowledge of their disease and likely to make useful observations. Obese diabetics in whom the necessity for insulin treatment had not been satisfactorily established were excluded: although some of the patients were slightly overweight for their height and age they were already known to require insulin. Of the 42 patients studied 10 were inpatients, 24 were outpatients who made twenty-four-hour collections of urine for the estimation of glucose, and 8 were outpatients in whom the assessment of results has been based on the patient's own urine tests checked from time to time by random blood-sugar estimations. The age-distribution, duration of diabetes, and nature of preceding treatment (including diet) are shown in tables III–V.

TABLE VI—DAILY DOSAGE REQUIREMENTS OF INSULIN-ZINC SUSPENSIONS IN COMPARISON WITH PREVIOUS INSULIN DOSAGE

Same or less than +10%	+10% up to +50%	+50% or more	Increased, but not yet stabilised
15	10	5	4

Observations Made *

In view of the great variation from one patient to another the results are presented in relation to the separate problems which need to be answered.

DOSAGE OF INSULIN-ZINC SUSPENSIONS IN RELATION TO PREVIOUS INSULIN DOSAGE

It has been possible to compare the dose of insulin-zinc suspension required with the previous dose of other insulins in 34 of the 42 patients (table VI). The 4 patients requiring an increased dose who are not yet stable are 2 patients who abandoned the new treatment on finding increased glycosuria without trying the effect of a larger dose, and 2 patients who could not control hyperglycæmia without developing insulin reactions. The latter are still not satisfactorily controlled with insulin-zinc suspensions but can already tolerate a

* A summary of the main data obtained from the whole series is obtainable from the office of THE LANCET, 7, Adam Street, Adelphi, London, W.C.2.

larger dose than previously without any increased incidence of hypoglycæmic reactions.

It is clearly important to study further those patients who have required a larger dose of insulin-zinc suspensions. It has become apparent that in certain instances the increased dose merely reflects an improvement in treatment. These patients have previously been receiving an inadequate amount of insulin, and doses insufficient to provide twenty-four-hour control have given rise to hypoglycæmic reactions. Because insulin-zinc suspensions produce a more evenly sustained hypoglycæmic action, such patients can tolerate a larger dose, which may give them significantly better twenty-four-hour control. It might be argued that the detailed adjustments in diet which the patients have sometimes made during the period of stabilisation have enabled them to tolerate a bigger dose of insulin. Previous experience of the control of these and similar diabetics with soluble insulin twice daily and with mixtures of soluble insulin and P.Z.I. has been that little can be gained by further dietary adjustments in the former group because the blood-sugar level is liable to fluctuate owing to the rapid action of soluble insulin, and in the latter group because the time of maximum action of the mixture tends to vary. The following case-record illustrates some of these points.

Case 5.—A man, aged 48, with five years history of diabetes, lost weight at the onset, but the symptoms were never severe, and there was no serious ketosis. He was treated with 20 units of soluble insulin A.M. and 18 units of soluble insulin P.M. with a 2500-calorie diet. He kept well on this but could not control glycosuria without reactions and definitely could not tolerate an increase in dose of soluble insulin. The average twenty-four-hour output of glucose was 28 g. On treatment with a mixture of 30 units of insulin lente and 30 units of insulin semilente he is now much better controlled, with an average twenty-four-hour output of 8 g. of glucose. Before this state of affairs was achieved insulin lente alone was tried in gradually increasing doses, but this provided no control until the late afternoon, even when breakfast carbohydrate was drastically restricted together with increased carbohydrate during the latter part of the day to prevent afternoon and evening hypoglycæmia when the dose was increased. At this stage the urine passed on waking was sugar-free, whereas the forenoon blood-sugar level was over 300 mg. per 100 ml.; thus the need for insulin semilente was clearly established.

That the increase in dosage required is not always an indication of better control is illustrated by the following case-record:

Case 6.—A woman, aged 53, with fifteen months' history of diabetes. The onset was acute with thirst and loss in weight, but no serious ketosis developed. Glycosuria was easily controlled on a 2500-calorie diet with 14 units of soluble insulin A.M. and 10 units of soluble insulin P.M. On this régime most of her urine tests were clear and the average twenty-four-hour urine output of glucose was 6 g. One of these twenty-four-hour specimens gave a negative qualitative test with Fehling's solution. On changing over to insulin lente the patient developed a considerable glycosuria on 24 units and was subsequently satisfactorily controlled with 48 units and suitable readjustment of dietary carbohydrate distribution. On this régime her average twenty-four-hour excretion of glucose was 3 g. and her urine tests were mostly free from sugar as previously. The satisfactory control was confirmed by the finding of a forenoon blood-sugar level of 171 mg. per 100 ml. and an afternoon level of 123 mg.

Most of the patients in this series had been previously controlled with two injections of soluble insulin daily before restabilisation with insulin-zinc suspensions. The group of patients requiring an increased dose of insulin has, however, included patients previously treated with a mixed injection of P.Z.I. and soluble insulin in the morning. This is illustrated by the following example:

Case 17.—A man, aged 23, with eight months' history of diabetes. The onset was acute, and he was controlled on a diet of 2300 calories with 36 units of P.Z.I. and 36 units of soluble insulin in the morning. (The insulins were mixed in the syringe, the soluble insulin being drawn up first.) On this régime the average twenty-four-hour excretion of glucose was 11 g. Most of the urine tests were clear. On changing over to insulin lente it became necessary to increase the dose from 72 units to 110 units, and on this dose with suitable redistribution of dietary carbohydrate the patient maintains almost normoglycæmic control without any reactions. Two of the three twenty-four-hour specimens were negative to Fehling's solution, and the average excretion of reducing substances has been 1 g. The dietary carbohydrate was distributed as follows (expressed in terms of ounces of bread): breakfast 2; mid-morning 2; lunch 3; mid-afternoon $2^1/_2$; 6 P.M. evening meal 3; supper 2.

This patient is a physicist, and his observations on the new insulin and other matters are of interest. He finds that control is smoother and mealtimes are less critical—i.e., there is less tendency to hypoglycæmia if he is late for a meal. On the old régime his control was good but was subject to unpredictable variations from day to day, quite apart from variations brought about by different activities. These variations are not in evidence on treatment with insulin lente. He finds that the best time to take his insulin is 45 min. before breakfast. He now needs to use a 2-ml. syringe even with insulin lente as strong as 80 units per ml., whereas previously he used a 1-ml. syringe. He has observed that the quality of many 2-ml. syringes on the market is very poor. He has had trouble with leaking plungers, asymmetrical nozzles which do not provide a satisfactory union with the needles, and inaccurate markings on the syringes, which may have a substantial zero error. This patient, who is now so excellently controlled, might easily have abandoned the new treatment on changing over to 72 units, which provided a totally inadequate control, whereas he had previously been well stabilised on this dose of a P.Z.I./soluble mixture. This shows how necessary it is to warn outpatients that increases in dosage, which may need to be quite substantial, are not uncommonly needed, and that this does not mean that the new insulin will be unsatisfactory.

Some mention should be made of the 8 patients who are omitted from table VI. 3 of these were new diabetics, and 2 were inpatients being restabilised after episodes of severe ketosis. The remaining 3 are still not stabilised but have been excluded because unusual circumstances make comparison of dosage valueless:

One is a pregnant woman with a particularly severe type of diabetes which is virtually uncontrollable. After long-continued inpatient treatment she is still liable to develop severe hypoglycæmia or equally severe ketosis for no apparent reason. Insulin-zinc suspension was given a brief trial, during which glycosuria was even greater than previously. As this happened at the beginning of our series, further study was not undertaken. The place of insulin-zinc suspensions in the treatment of these so-called "brittle" diabetics remains to be established.

The second patient is a young diabetic who six months ago passed through a phase of unexplained insulin resistance during which he could not be controlled with 180 units of insulin in three divided doses. At this stage he showed no tendency to develop severe ketosis, but his blood-sugar level was about 400 mg. per 100 ml., and there was slight acetonuria. Treatment with insulin four-hourly in hospital led to satisfactory control at a much lower level of dosage. Immediately before treatment with I.Z.S. he was moderately well controlled as an outpatient with P.Z.I. 22 units and soluble insulin 36 units A.M. and soluble insulin 18 units P.M. He was changed over gradually to insulin lente, taking three separate injections daily during the transition period—e.g., 50 units of insulin lente and 16 units of soluble insulin by separate injections A.M., and 10 units of soluble insulin P.M. When he omitted the soluble insulin altogether, his previous insulin resistance recurred, and despite repeated substantial increases in insulin dosage his hyperglycæmia and glycosuria increased. As he has been feeling well and continuing his work as a steel worker, an attempt has been made to overcome this

insulin resistance by using insulin lente. At a dose of 140 units he showed clear urine tests in the afternoon for the first time. Subsequently, however, on 160 units he still had glycosuria throughout the day and abandoned the treatment. He is already well controlled with a much smaller total dose, taking a mixture of P.Z.I. and soluble insulin A.M., with additional soluble insulin P.M.

The third patient excluded was an elderly diabetic who has not been satisfactorily stabilised on insulin lente or on her previous régime and has abandoned insulin lente, which produces painful local reactions similar to those she has previously had with P.Z.I. (Further details are given below in remarks on local allergic reactions.)

Only 1 patient has required a dose of insulin-zinc suspension smaller than the total dose previously taken. This was a woman who was complaining of hypoglycæmic reactions on 20 units of soluble insulin A.M. with 18 units P.M. She was changed over to 34 units of insulin lente without preliminary stabilisation on 34 units of soluble insulin in divided doses, which would normally have been the next step in treatment. Control was satisfactory, and this patient is included in table VI under the heading "same dose."

Possibly the dosage might have been reduced in some of the patients who have been stabilised on an equivalent dose of insulin-zinc suspension and have at some stage developed mild afternoon hypoglycæmia. The policy adopted in this series, however, was to deal with such an eventuality by readjustment of dietary carbohydrate distribution rather than by reduction in insulin dosage. In some instances such readjustment has in fact been followed by further increases in dosage without reactions. The evidence provided by twenty-four-hour collection of urine and estimation of total excretion of glucose has made it clear that apparently satisfactory control, judged by urine tests and selected blood-sugar estimations, is often in reality far from satisfactory. More widespread use of this method of assessing diabetic control would, in my opinion, show that the number of patients with acute diabetes who can keep their excretion of glucose below 10 g. a day while leading a normal life is probably quite a small minority. Meticulous care is required to effect such a measure of control, both in the arrangement of diet and in the precision of insulin dosage.

DURATION OF ACTION OF INSULIN LENTE AND ADMIXTURE WITH INSULIN SEMILENTE AND INSULIN ULTRALENTE

A satisfactory consistent pattern of diabetic control has been achieved in 29 of the 42 patients, and it is possible to state without any reasonable doubt in these patients whether admixture with the more rapidly acting insulin semilente or with the more slowly acting insulin ultralente is necessary to achieve satisfactory control for twenty-four hours with a single injection of an insulin-zinc suspension. The findings are summarised in table VII. Of the 4 patients who require a mixture of insulin lente and insulin ultralente 1 was better controlled with insulin lente alone than with soluble insulin twice daily, and 2 were as well controlled. The 4th was poorly controlled with insulin lente alone and better with the mixture of insulin lente and insulin ultralente but still is not perfectly controlled. The first 3 patients are already showing signs of still further improvement in control with the mixture. As these patients on insulin lente alone consistently show satisfactory control during the daytime with escape to hyperglycæmia and glycosuria in the late evening and night, further improvement in control through dietary rearrangement is impossible.

The proportions of insulin lente to insulin ultralente required by these 4 patients have not been finally established, but 2 of them seem to need 2 L/1 U.L., which corresponds to a mixture of 2 of amorphous insulin to 8 of crystalline. The 3rd patient appeared to need 1 L/3 U.L., which corresponds to 0·6 of amorphous insulin to 9·4 of crystalline. This patient might be satisfactorily controlled with insulin ultralente alone. The proportions were gradually changed in his case, and a very satisfactory control was achieved. On several days he remained sugar-free, control, judged by urine tests, lasted until the next morning, and forenoon and afternoon blood-sugar levels taken while he was an outpatient were 236 and 216 mg. per 100 ml. respectively. Unfortunately he abandoned treatment at this stage and returned to soluble insulin twice daily. His reason which seemed inadequate, was that he had had several colds while on the new insulin, whereas he had not previously been subject to colds. Previous control with soluble insulin twice daily had been erratic. As insulin ultralente has a duration of action similar to that of P.Z.I. in healthy students (Gerritzen 1953), it seems probable that patients who can be controlled with P.Z.I. alone may be equally well controlled with insulin ultralente. So far as patients with more severe diabetes are concerned, it seems likely that the needs of individual patients will vary throughout the range between insulin lente and insulin ultralente.

TABLE VII—RELATION BETWEEN DAILY DOSAGE AND DURATION OF ACTION OF INSULIN LENTE

Dosage	Less than 48 units	More than 48 but less than 80 units	80 units or more	Total
Insulin lente alone adequate	12	5	3	20
Insulin semilente required	2	2	1	5 (cases 4, 5, 15, 24, and 34)
Insulin ultralente required	2	1	1	4 (cases 11, 12, 13, and 28)

The state of affairs which exists in the 5 patients who require insulin semilente is somewhat different. Control in some of them may be possible with insulin lente alone, if carbohydrate intake is drastically curtailed in the early part of the day, with corresponding increase in carbohydrate taken in mid-afternoon and early evening. In 3 of these patients the pattern of control—i.e., forenoon glycosuria which clears during the afternoon and remains clear until the following morning—persisted in spite of such rearrangement of diet. The 2 other patients are well satisfied with their control with insulin lente. In 1 of these the average excretion of glucose was only 2 g. per twenty-four hours when he was an inpatient, but the blood-sugar level, which was normal at other times of the day, reached 182 and 200 mg. per 100 ml. on two occasions out of five during the forenoon. Ideally this patient should have an insulin-zinc suspension containing amorphous insulin in a slightly greater proportion than in insulin lente. At the time of these observations insulin semilente was not available to us.

The relative proportions of insulin lente and insulin semilente required by 2 of these 5 patients can now be assessed approximately. Both of these patients appear to be best suited by a mixture of equal parts of insulin lente and insulin semilente, which represents a mixture of 6·5 amorphous insulin with 3·5 crystalline. In both instances mixtures containing a smaller proportion of insulin semilente (amorphous) have been inadequate. As previous workers have not found it necessary to shorten the action of insulin lente by admixture with insulin semilente, these 2 case-records are given in detail so that the validity of the opinion expressed can be assessed. Details of case 5 have already been given above to illustrate a substantial increase in insulin dosage providing a greatly improved measure of control compared with previous treatment with soluble insulin twice daily. The second patient was a new diabetic who was stabilised on insulin lente as an outpatient and finally better stabilised on a mixture of insulin

semilente and insulin lente. This patient was an intelligent woman who has very quickly acquired a good understanding of her disease, partly from information passed on at frequent interviews during stabilisation and partly from Dr. R. D. Lawrence's book *The Diabetic Life*. Throughout the period of stabilisation, which took four weeks, she insisted on testing every specimen of urine passed (although a less exacting routine was suggested).

Case 15.—A woman, aged 34, developed thirst, polyuria, and loss of weight in August, 1953. Her own doctor found sugar and acetone in her urine and advised dietary restriction of carbohydrate. This reduced her symptoms, but they did not disappear completely, When first seen she was still underweight and taking an inadequate diet. Her afternoon blood-sugar level was 221 mg. per 100 ml., and her urine contained sugar but no acetone.

Treatment with 1800-calorie diet (145 g. of carbohydrate) was begun on Nov. 19, with 16 units of insulin lente. At first there was a tendency to hypoglycæmia at 7 P.M., and the patient had one mild reaction. After rearrangement of diet, reactions did not occur. After a week the patient felt really well for the first time since the onset of the diabetes, but urine tests consistently revealed heavy glycosuria during the forenoon, although the urine was sugar-free during the latter part of the day and usually also when she woke in the morning. When there was sugar in the first specimen a short-period test was clear. At this stage progressive restriction of breakfast and forenoon carbohydrate was advised, with transfer to afternoon and evening, and an increase to 18 units of insulin lente. The same pattern of response persisted in spite of this régime. Carbohydrate distribution was as follows (expressed in terms of ounces of bread): breakfast 1; 11 A.M. nil; lunch $1^1/_2$; 4.30 P.M. tea $2^1/_2$; and 7.30 P.M. supper $2^1/_2$.

The patient was then given a mixture of insulin lente 10 units with insulin semilente 8 units and soon achieved satisfactory control throughout the day and returned to a more normal diet. The average twenty-four-hour excretion of glucose was 11 g. during the period of insulin lente alone, when there was forenoon glycosuria. At this stage the forenoon blood-sugar level was 265 mg. per 100 ml., and afternoon blood-sugar 147 mg. The tests were not repeated after full stabilisation, because the patient had come to stay in Manchester for stabilisation and was anxious to return to her home. There is, however, every reason to believe that she is now almost normoglycæmic.

Of the 13 patients who have not been satisfactorily stabilised 3 have abandoned the treatment, 5 are brittle diabetics in whom control has never in the past approached normoglycæmia, and some further improvement might reasonably be expected in most of the remaining patients with further adjustment of diet and insulins.

A relation between the need for insulin ultralente and the level of insulin dosage has been suggested by Nabarro and Stowers (1953), who find that patients requiring large doses of insulin may need some insulin ultralente, and they and other workers have advised caution in using insulin-zinc suspensions when the daily requirement is very high. Table VII shows the insulin dosage found necessary in the 29 patients in whom a satisfactory and consistent pattern of control was achieved with the various insulin-zinc suspensions. No relation is shown between duration of action of insulin lente and dosage required. Although a high proportion of the patients adequately controlled with insulin lente alone require less than 48 units a day, the patients on larger doses do not, as has been suggested by other workers, necessarily require a slower-acting preparation; they may in fact require one that acts more rapidly.

The experience gained from this series is that control may be easy or difficult at high or low dosage, and that particular caution is necessary in patients who show much tendency to ketosis and/or hypoglycæmia (often young patients), irrespective of their insulin dosage. There may, on the other hand, be excellent control with high dosage in patients with acute diabetes, and insulin-zinc suspensions may prove satisfactory for them.

DIETARY ARRANGEMENTS WITH INSULIN-ZINC SUSPENSIONS AND USE OF MIXTURES OF AMORPHOUS AND CRYSTALLINE INSULIN-ZINC SUSPENSIONS

Experience with insulin lente has shown that the lowest blood-sugar levels are usually found in the afternoon, but occasionally the maximum effect occurs sooner and may lead to mild hypoglycæmia before the midday meal. Although details of dietary carbohydrate distribution will vary from patient to patient according to their varied activities and feeding habits, most of those with severe diabetes require some carbohydrate in the mid-afternoon (usually between 3 and 4.30) if they are to avoid hypoglycæmic reactions when taking a dose of insulin lente large enough to control their hyperglycæmia in the forenoon, before its maximum effect is reached, and again during the night when the effect is waning. Some patients need to show the same care during the afternoon as is needed before lunch when severe diabetes is controlled with two injections of soluble insulin. In general, however, the tendency to hypoglycæmic reactions is less with insulin-zinc suspensions, and they are more readily avoided. Men who often arrive home late from work may find it more convenient to take insulin twice daily, because delay in taking the evening meal will not then expose them to the risk of reactions (the second injection of insulin being merely postponed).

The proportions of amorphous insulin and crystalline insulin desirable in a ready-mixed preparation for general use (such as insulin lente, in which the proportions are 3 : 7 : : amorphous : crystalline) will obviously be related to the proportions of patients requiring a substantially more rapid or more delayed preparation. Nabarro and Stowers (1953) found 8 patients out of 22 who required admixture with insulin ultralente, and only 1 patient out of 22 who required admixture with insulin semilente or other more rapidly acting preparation. They reach the conclusion, which is logical on their findings, that a mixture containing more crystalline insulin, such as 2/8, would be more suitable in this country. The patients studied in the present series, however, include as many who require insulin semilente as insulin ultralente, and the remainder have been satisfactorily controlled with insulin lente alone and normal dietary distribution similar to that used by Nabarro and Stowers in London rather than the distribution loaded in the early part of the day, which is usual in Denmark.

In view of these findings there is no reason to believe that any single mixture containing different proportions of amorphous and crystalline insulin-zinc suspensions would be likely to provide adequate control for a greater proportion of diabetics than the 3/7 mixture at present available as insulin lente. Although a 2/8 mixture, suggested by Nabarro and Stowers (1953), would reduce the necessity for admixture with insulin ultralente, it would probably lead to a larger number of patients requiring admixture with insulin semilente. Before this problem can be finally solved, further study is required to determine, in a larger series, the number of patients requiring admixture with insulin ultralente and insulin semilente.

During the present study the early patients were given the type of diet recommended by the Novo Laboratories, but it was soon found that this produced forenoon glycosuria and that a more normal distribution was desirable with special loading of the afternoon period if any further change was necessary. Further experience of outpatient control with insulin-zinc suspensions is clearly necessary: inpatient studies may give misleading results, so far as dietary distribution and duration of action are concerned, because the normal activity of daily life may significantly alter the response to any individual régime. Suggested dietary carbohydrate distributions are given below.

ROUTINE ADOPTED IN OUTPATIENT TRANSFER TO INSULIN-ZINC SUSPENSIONS

When control is satisfactory on the existing régime, the main risk of transfer to insulin-zinc suspension is that the dose required may be considerably greater, although many patients will be satisfactorily controlled with the same dosage. The logical method of transfer is to begin with the same total dose but to warn the patient to increase the dose progressively in the event of thirst or of heavy glycosuria. Should the increase be about 50–100%, as in some patients in this series, adjustment of insulin dosage at a weekly diabetic clinic would prove very unsatisfactory; and patients who cannot be relied on to adjust their own dose in the light of their own urine tests should be seen more often than once a week. In this series I was able to see the outpatients on six mornings a week; and, when necessary, individual patients were seen every two or three days. In this way detailed supervision could be combined with study of the action of insulin-zinc suspensions in diabetics carrying on their normal activities.

Besides warning patients that an increase in dosage may possibly be necessary, we should tell them that the effect of the insulin is likely to be greatest during the afternoon and early evening, that carbohydrate will probably be required during the mid-afternoon, and that at that time of day they must watch for signs of mild hypoglycæmia. They may at the same time be reassured that sudden severe hypoglycæmia is less likely than with soluble insulin. Apart from the warning that carbohydrate may need to be taken during the mid-afternoon, the diet may be spread evenly throughout the day—e.g., breakfast 1–2 (carbohydrate expressed as ounces of bread); mid-morning 0–1, lunch $1^1/_2$–3, mid-afternoon 1–$1^1/_2$, evening meal 2–4, bed-time 0–1, making a total of $5^1/_2$–$12^1/_2$, or 100–250 g.).

Most of the patients in this series were accustomed to take their evening meal at 5.30–6.30 P.M. (as is usual in the North of England). Patients with severe diabetes who are accustomed to a later evening meal may need to be warned that, to prevent hypoglycæmia, they may require carbohydrate before the evening meal. A few of the patients in this series with very severe diabetes on soluble insulin twice daily have been transferred gradually to insulin-zinc suspension. During the transition period, when insulin-zinc suspension and soluble insulin are taken in the morning and soluble insulin at night, the patient must of course be told to give the insulin-zinc suspension and soluble insulin as separate injections. Not enough patients have yet been studied to decide whether this method of gradual transfer has any particular advantage.

MEASURE OF CONTROL

The variation in control from day to day on any single régime is such that one must be very cautious in claiming that different régimes have different effects. Of 26 old diabetics in this series in whom a consistent pattern of control was achieved with insulin-zinc suspensions significant improvement appears to have been achieved in 10.† The criteria of objective improvements are (1) a considerable reduction in glycosuria shown by twenty-four-hour tests, without increase in incidence of reactions, or (2) a considerable reduction in incidence of reactions without increase in glycosuria. 5 of these patients were previously unsatisfactorily controlled with soluble insulin twice daily. No attempt was made to improve this control by using P.Z.I. in addition; so a similar improvement might possibly have been achieved with pre-existing methods of treatment. It is also possible that part of their improvement may be attributable to better general care of their diet and diabetic life after a period of careful supervision. Control with soluble insulin twice daily was previously rendered unsatisfactory by hypoglycæmic reactions even at dosage levels which provided inadequate twenty-four-hour control. Of the other 5 patients showing improvement 3 were on a single combined injection of P.Z.I. and soluble insulin, the 4th was on a small injection of P.Z.I. alone; and the 5th was on a combined injection of P.Z.I. and soluble insulin in the morning with additional soluble insulin in the evening. These patients commented that control with I.Z.S. was less erratic. Besides these 10, there are other patients in whom control appears to be improved but objective evidence of improvement has not yet been obtained.

† In the multigraphed appendix these are cases 3, 5, 10, 14, 16, 17, 19, 23, 28, and 34.

DAY-TO-DAY VARIATIONS

I can confirm the clinical impression formed by previous workers that insulin-zinc suspensions produce a remarkably smooth and uniform hypoglycæmic action with little day-to-day variation. Many patients have noticed that insulin-zinc suspensions are more reliable in this respect, and none have noticed any unpredictable variation appearing with insulin-zinc suspensions when this has not previously been a striking feature of the diabetes. Dramatic improvement in standard of control has not so far been achieved in the brittle diabetics, who have been difficult or impossible to control in the past except with frequently repeated doses of soluble insulin. The possibility of achieving significantly better control with two daily injections of insulin semilente has not yet been explored.

LOCAL ALLERGIC REACTIONS

The claim that insulin-zinc suspensions do not cause local allergic reactions has not, unfortunately, been confirmed. One patient in this series, who had complained of local reactions when treated with P.Z.I. some years previously and had been free from reactions when on soluble insulin twice daily (50 units b.d.), again developed reactions when on a single injection of 100 units of insulin lente. The reaction took the form of a painful lump at the site of injection, developing in a few hours and fading within twenty-four to thirty-six hours. The lump was sometimes but not always red, and the reaction was minimised but not abolished by giving two separate smaller injections. The patient has abandoned treatment and returned to soluble insulin twice daily. I have been told by a colleague about another patient who developed local allergic reactions at the site of injections of insulin-zinc suspension. This patient was also on a large dose (90 units of a mixture of insulin lente and insulin semilente) and also gave a history of local reactions to P.Z.I. One of the other patients in the series, however, who had experienced reactions to P.Z.I., had no reaction to insulin-zinc suspension. In view of the fact that even soluble insulin may cause local allergic reactions in a very small minority of patients, it would be most surprising to find complete freedom from reactions to insulin-zinc suspensions.

Discussion

During this trial, in which the control of severe diabetes in outpatients was studied in far more detail than would be possible at a weekly outpatient clinic, certain definite impressions were formed. Rather more than half the patients with severe diabetes required an increase in dose before stabilisation on insulin-zinc suspension was satisfactory. This often but not always indicated inadequate previous control and was associated with improvement in control. In addition insulin lente alone was inadequate, and admixture with insulin semilente or with insulin ultralente was necessary in 9 of 29 patients (about 30%) to achieve satisfactory control throughout twenty-four hours. Lengthy observation on different doses of insulin lente, with repeated adjustment of dietary distribution, has often been needed before one could be sure that either insulin semilente or insulin ultralente was needed for admixture with insulin lente. Pre-

liminary impressions gained when the patient was receiving an inadequate dose of insulin lente were sometimes misleading, and control was often achieved by increasing the dose considerably. In view of the necessity for this increase in dosage in a substantial proportion of patients, appropriate precautions, which have been outlined, must be taken in transferring outpatients to the new insulins.

In view of the necessity for such precautions it would quite clearly be unwise to withdraw previously available long-acting insulins from the market. If preliminary favourable impressions are confirmed, it may be possible to discontinue the practice of instituting treatment with long-acting insulins such as P.Z.I. and globin zinc insulin for new diabetics and patients previously treated with soluble insulin. If this were done, P.Z.I. and globin zinc insulin might be gradually withdrawn over a period of a few years.

Hallas-Møller et al. (1951, 1952) have already emphasised that the duration of action of any particular preparation of insulin varies from patient to patient. Provided that the individual pattern of response of each patient to insulin lente is studied, satisfactory control may be achieved in a high proportion of diabetics with this preparation either alone or in combination with semilente or ultralente. Failure to achieve satisfactory control may be temporary, in which case it can be overcome by suitable adjustments of dosage, mixture, and dietary distribution. In the present series, apart from a few patients who had abandoned treatment (unnecessarily) and 1 patient who had local allergic reactions, the persistent failures were limited to brittle diabetics, who cannot be controlled by conventional methods of treatment other than soluble insulin four-hourly with dose-to-dose adjustment in hospital. Even in this group of patients insulin-zinc suspension may yet prove more satisfactory than previous methods of outpatient treatment. Except for this small group, there is every reason to believe that patients with acute diabetes, including those with a high insulin requirement, may be satisfactorily controlled with a single daily injection of an appropriate insulin-zinc suspension. Usually the tendency for patients with severe diabetes to develop sudden hypoglycæmia is less than with soluble insulin; but vigilance may be necessary during the latter part of the day, and the dietary carbohydrate distribution should normally include a mid-afternoon meal because the maximum hypoglycæmic action usually persists from noon till evening.

Summary

A trial of insulin-zinc suspensions in the management of acute diabetes is described. Most of the patients were outpatients who were studied in detail while they carried on with their normal activities.

The dose required to achieve satisfactory control may often be higher than the dose of insulin previously used, even when previous treatment has been energetic and the dose of insulin pushed to the limit of tolerance.

There is natural variation from patient to patient of the duration of action of insulin lente. Some patients require a more rapidly acting preparation such as a mixture of insulin lente and insulin semilente; others require a more slowly acting preparation such as a mixture of insulin lente and insulin ultralente or insulin ultralente alone. No correlation has been found between dosage level and response to insulin lente—i.e., need for admixture with semilente or ultralente.

The diet should be one in which carbohydrate is spread evenly throughout the latter part of the day. A mid-afternoon meal is usually necessary, even when the main evening meal is taken as early as 6 P.M.

There is no reason to believe that any mixture of different proportions of amorphous and crystalline insulin-zinc suspensions would provide satisfactory control in a higher proportion of diabetics than the 3/7 mixture at present available as insulin lente.

Precautions necessary during the institution of outpatient treatment with insulin-zinc suspensions are described. There is evidence that the withdrawal of previously available preparations such as P.Z.I. would be very unwise at this stage.

Preliminary experience suggests that acute diabetes can usually be controlled satisfactorily with a single daily injection of a suitable insulin-zinc suspension. In many patients, however, long detailed study is needed before the correct dose and most suitable preparation can be advised.

The hypoglycæmic action of insulin-zinc suspensions seems to be more even and less erratic than that of preparations previously available.

Local allergic reactions have been noted by 2 patients taking large doses of insulin-zinc suspensions.

I want to thank Prof. Robert Platt and Dr. H. T. Howat for permission to study these patients, who have been under their care at the Diabetic Clinic and in the wards of the Manchester Royal Infirmary; Mr. H. Varley and the staff of the department of biochemistry, Manchester Royal Infirmary, for their helpful coöperation in estimating glucose in very large numbers of samples of blood and urine; Dr. I. S. Bailey and Dr. J. R. A. Mitchell for assisting with the inpatients; my colleagues in the university department of medicine for their helpful advice and criticism; and not least the patients, who have been put to considerable trouble during the investigation and have coöperated most willingly.

Messrs. British Drug Houses supplied the insulin lente, and Evans Medical Supplies Ltd. supplied the insulin semilente and insulin ultralente before these preparations were generally available.

ADDENDUM

The preliminary impression that hypoglycæmic reactions are less frequent and less severe than with soluble insulin has not been entirely confirmed by further observations. A few unexplained and sudden reactions have occurred in the latter part of the day in patients previously well controlled.

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CLINICAL TRIAL OF ALPHA-TOCOPHEROL IN THE PROPHYLAXIS OF THROMBO-EMBOLISM

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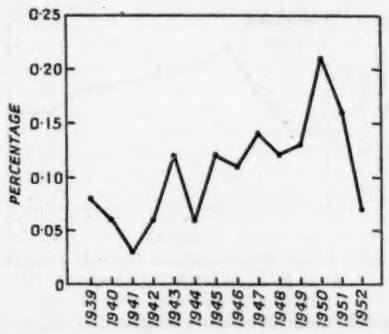
BRISTOL ROYAL INFIRMARY

IN 1950 the incidence of pulmonary embolism found at necropsy at Bristol Royal Infirmary was the highest for ten years and probably higher than it had ever been (Wilson 1952). One of us (E. W. P.) undertook a study to see if there was any special cause for this increase, and the result is embodied in a thesis; but no specific cause was found. In 1951 there was a slight fall, and in 1952 a return to a level comparable with previous years (see figure).

As a result of the experience of 1950 the need for a prophylactic agent against thrombo-embolism was strongly felt. Ochsner et al. (1950), of New Orleans, had reported favourably on the use of alpha-tocopherol for this purpose; and it was therefore decided to give it a trial.

Rationale

Zierler et al. (1948) have reported that tocopherols occur in normal human sera in a detectably antithrombic concentration (1 mg. per 100 ml.) and probably play a part in maintaining the equilibrium which prevents intravascular clotting of the blood. Hence the thromboses which take place in experimental vitamin-E deficiency.



Fatal pulmonary emboli as percentage of total admissions to Bristol Royal Infirmary in 1939–52.

Ochsner et al. (1950) hold that alpha-tocopherol is normally present in the alpha-globulin and gamma-globulin fractions of the blood and may be the normal circulating antithrombin. They state, however, that, when added to plasma, alpha-tocopherol becomes bound to fibrinogen and does not act as an antithrombin unless a trace of calcium is also added. They think it necessary to give intravenous injections of calcium gluconate to increase the effect of alpha-tocopherol in its clinical use.

Kay (1951) described a test for the estimation of antithrombin levels in the plasma which he regards as a "prethrombotic index." Various dilutions of thrombin are added to the patient's plasma: if the antithrombin is present it will fix the thrombin, and when the mixture is added to fibrinogen it will not produce a clot. In a series of patients on whom daily antithrombin estimations were made it was found that, if the level fell below a certain point, thrombosis was likely to occur in six to seventy-two hours, provided that the prothrombin-time was normal. Kay found a considerable diminution of low levels in patients treated with alpha-tocopherol and calcium gluconate.

On the results of these investigations a new concept of phlebothrombosis was formed, based on a relative disproportion between prothrombin and antithrombin levels in the blood.

Wright (1952) must be cited here as being in disagreement with Ochsner et al. and with Kay on the effect of alpha-tocopherol on the level of antithrombins in the blood. At Cornell University Medical School antithrombin levels were estimated according to the methods of Kay, Astrup, and Quick with various levels of alpha-tocopherol in the plasma from 0·60 to 3·2 mg. per 100 ml. without significant change.

Ochsner et al. (1951) reported a series of cases treated prophylactically with alpha-tocopherol and intravenous calcium gluconate after major surgery. Of their control group of 246 patients 24 (10%) developed intravascular clotting, of whom 5 had fatal pulmonary emboli. Of 457 treated patients only 7 (1·5%) developed thromboses, with 1 fatal embolus. These good results encouraged us to try the method.

Method

The trial was made at the Bristol Royal Infirmary on 200 surgical cases, 100 of which were used as controls. The patients were all aged more than 40 and were all under the care of one surgical firm, thus providing uniformity of treatment. The cases for treatment were chosen at random. Treatment was started on the day of admission. Alpha-tocopherol acetate 200 mg. was given daily by mouth, and 10% calcium gluconate 10 ml. was given intravenously every forty-eight hours. Daily observations were made on all the cases.

Calf tenderness was taken as an indication of thrombosis in the deep veins of the calf. If there was also associated œdema, the main deep veins of the leg were considered to be thrombosed. The former state was regarded as a mild deep thrombosis, the latter a severe one.

Results

The general characteristics of the groups were as follows:

	Treated	*Controls*
Males	57	62
Females	43	38
Average age	56	56
Carcinoma	25	19
Abdominal operations	37	34
Hernia	14	20
Prostatectomies	4	7
Operations on thyroids, breasts, &c.	20	20

It will be seen that although the groups were chosen at random they were similar in the most important respects.

Of the controls 9 patients had severe deep venous thromboses in the legs, and 2 of these had non-fatal pulmonary emboli; in addition 1 patient had a severe superficial thrombosis (not associated with a drip or with varicose veins); 3 others had mild deep thromboses shown by calf tenderness:

	Treated	*Controls*
Pulmonary emboli:		
Fatal	—	—
Non-fatal	—	2
Deep thrombosis:		
Severe	—	9
Mild	7	3
Superficial thrombosis:		
Severe	—	1
Mild	3	—

In the treated group there were no severe deep thromboses and no pulmonary emboli; but 7 patients had mild deep thromboses, and 3 mild superficial thromboses.

Comments

Though there was little difference in the numbers of patients developing thromboses in the two groups—10 treated patients and 13 controls—there was a distinct difference in the severity of these thromboses. Most of the thromboses developing in the treated group would have escaped notice if the patients' legs had not been carefully examined every day. It may also be doubted whether calf tenderness is always caused by calf thrombosis. Of the controls 10 had thrombosis of some severity and 2 had pulmonary emboli.

These results tend to support the claims of Ochsner et al. in that alpha-tocopherol and calcium gluconate have some effect on the degree, if not on the incidence, of thrombosis.

After giving 100 patients intravenous calcium gluconate every other day we concluded that, in a busy hospital with a hard-pressed medical staff, this method is hardly practicable for general application. We therefore decided to substitute for the intravenous calcium gluconate oral calcium gluconate gr. 60 t.d.s. and vitamin D (' High Potency Ostelin ' 50,000 units daily) to aid its absorption. Another series was then begun with three groups of patients—one group receiving alpha-tocopherol, calcium gluconate, and vitamin D by mouth, a second receiving only alpha-tocopherol, and the third acting as controls.

After 50 patients had been observed in each group, the series had to be discontinued because of our departure to other hospitals. Of the controls 7 developed thromboses; of those receiving alpha-tocopherol, calcium gluconate, and vitamin D 5 developed thromboses; and among those receiving alpha-tocopherol alone 2 developed thromboses.

Conclusion

The contention of Ochsner et al. that administration of alpha-tocopherol by mouth with intravenous calcium gluconate is prophylactic against thrombo-embolism has been tested by observation on 100 treated patients with 100 controls. Thromboses developed in both groups but were considerably less severe in the treated group.

Against the benefit apparently obtained by the method must be offset the not inconsiderable labour of giving a large number of patients an intravenous injection every other day.

We wish to express our thanks to Mr. D. G. C. Tasker and Mr. R. V. Cooke, who kindly allowed these observations to be made on their patients, and to the many surgical dressers who helped in making them. Messrs. Roche provided us with the alpha-tocopherol (' Ephynal ').

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THE BROMSULPHTHALEIN-RETENTION TEST IN ACUTE CHOLECYSTITIS AND IN SOME OTHER ACUTE INTRA-ABDOMINAL CONDITIONS

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THE bromsulphthalein-retention test of liver function was developed by Rosenthal and White (1924, 1925) and has been used extensively in cirrhosis and hepatitis. Retention of bromsulphthalein was noted in a number of patients with acute peritonitis admitted to the surgical professorial unit at the Aberdeen Royal Infirmary (Wilson 1950). This observation has now been carried further, and the results are reported here. The important finding, which is of considerable diagnostic value, was that the test was almost consistently positive in acute cholecystitis and that the degree of retention was sometimes very striking.

Methods

As in the original method of Rosenthal and White, bromsulphthalein was injected intravenously in a dose of 2 mg. per kg. body-weight and the amount of dye in the serum thirty minutes later was determined.

A 5% solution of bromsulphthalein in distilled water was kept in 3-ml. ampoules, and the appropriate dose in millilitres calculated by dividing the patient's weight in pounds by 55. A preliminary sample of about 10 ml. of blood was taken from an arm vein, and the bromsulphthalein was injected through the same needle. Exactly thirty minutes later a second 10 ml. of blood was withdrawn from a vein of the opposite arm. Hæmolysis was usually avoided by using dry needles and syringes and by gentle aspiration of the blood. The samples were left for about thirty minutes and centrifuged at low speed, and the serum was separated. To the first (pre-injection) sample 2 drops of distilled water was added, and to an equal volume of the second sample 2 drops of 10% sodium hydroxide, which in the presence of bromsulphthalein gave a purple tint to the serum.

The serum-bromsulphthalein level was estimated by the usual method of making comparisons with standard solutions in a comparator box (see Bockus 1946). If both sera were slightly hæmolysed, sodium hydroxide was added to the first instead of water, so that alkaline hæmatin was present in both. If the second serum alone was slightly hæmolysed, half of it was used as the control, and to this half 2 drops of 10% hydrochloric acid was added (acid and alkaline hæmatin are of about the same tint). The pre-injection sample was not really necessary, but was useful in detecting slight hæmolysis in the second sample; if hæmolysis was more than slight the test was repeated.

In all the patients the tests were done at intervals throughout the course. For reasons given below, morphine, pethidine, and amidone were avoided. If morphine had been given before admission, the test was made only after its effect had passed off.

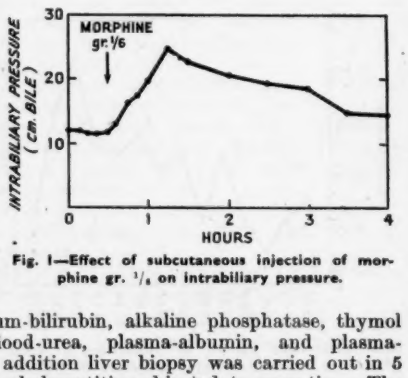

Fig. 1—Effect of subcutaneous injection of morphine gr. 1/6 on intrabiliary pressure.

Other estimations included serum-bilirubin, alkaline phosphatase, thymol turbidity, blood-urea, plasma-albumin, and plasma-globulin. In addition liver biopsy was carried out in 5 cases of acute cholecystitis subjected to operation. The biopsy specimen was taken from the liver at a point reasonably distant from the gall-bladder.

Results

Effects of Morphine

The effect of morphine on the pressure in the common bile-duct was determined in 6 patients in whom the duct was being drained through a T-tube which had been inserted at a previous operation. The pressure was measured with a manometer attached to the tube, the zero level being about the level of the duodenum. In all cases morphine gr. 1/6 injected subcutaneously produced an immediate steep rise of pressure, which began to subside after an hour and returned to a normal level in three or four hours (fig. 1).

Pethidine and amidone produced only occasional and irregular pressure changes, but their effect was enough to make their use undesirable during the bromsulphthalein test.

In 6 other patients, with minor ailments, the bromsulphthalein test was done one day and repeated next day ten minutes after a subcutaneous injection of morphine gr. 1/6. In all the patients the first test was negative, but the second test, after morphine, was

TABLE I—ACUTE CHOLECYSTITIS: RELATION BETWEEN DEGREE OF INFLAMMATION AND RETENTION OF BROMSULPHTHALEIN

Case no.	Sex	Age (yr.)	Retention (%)	Inflammatory changes	Treatment
1	F	31	60	Empyema	Cholecystectomy
2	F	57	60	Empyema	Cholecystectomy
3	F	70	60	Very acute	Conservative
4	F	43	55	Very acute	Cholecystectomy
5	F	40	55	Very acute	Cholecystectomy
6	F	59	40	Acute	Conservative; later cholecystectomy
7	F	..	30	Acute (perforation, bile peritonitis)	Cholecystectomy
8	F	78	30	Acute	Conservative
9	F	60	30	Acute	Cholecystectomy
10	M	66	20	Acute	Conservative
11	M	48	20	Acute	Conservative
12	F	41	15	Acute	Conservative; later cholecystectomy
13	M	69	15	Acute	Conservative
14	F	60	15	Acute	Cholecystectomy
15	F	46	10	Mild	Conservative
16	F	47	10	Mild	Conservative; later cholecystectomy
17	M	45	10	Mild	Conservative
18	F	72	10	Very acute	Cholecystectomy
19	M	51	5	Mild	Cholecystectomy
20	F	57	5	Mild	Conservative
21	F	59	5	Mild	Cholecystectomy
22	F	46	5	Mild	Conservative
23	F	40	0	Very acute	Cholecystostomy; later cholecystectomy

positive in 5 of the 6 patients; the average retention at thirty minutes was 12%, the range being from 5 to 20%.

Acute Cholecystitis

The bromsulphthalein test was done in 23 cases of acute inflammation of the gall-bladder. The diagnosis was confirmed by operation in 14; the 9 other patients were treated conservatively, but the clinical features were so characteristic that the diagnosis was not seriously in doubt. The results are shown in table I, which also indicates an assessment of the degree of inflammation present and the treatment undertaken.

Retention of bromsulphthalein was found in 22 of the 23 cases, and the degree of retention seemed to be greater in those cases with most inflammatory change in the gall-bladder, except cases 18 and 23. Serial estimations done on patients with much retention of bromsulphthalein showed that return to a normal negative test took place with clinical recovery (fig. 2). These results were compared with parallel estimations of serum-bilirubin, serum-alkaline phosphatase, and thymol turbidity. Three of the 23 patients were mildly jaundiced, and latent jaundice was noted in 2 others. Raised values for alkaline phosphatase and thymol turbidity were noticed in 8 and 9 cases respectively, but in general did not reflect the severity of the inflammation. However, in 3 cases a return to normal turbidity followed clinical recovery, including case 23, in which repeated bromsulphthalein tests were negative but which was severe enough to compel an emergency cholecystostomy.

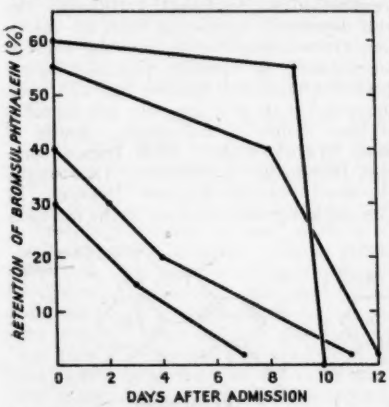

Fig. 2—Four typical examples of return of bromsulphthalein retention to normal on recovery from acute cholecystitis.

Biopsy of Liver

Liver biopsy was done in 5 of the cases of very acute cholecystitis submitted to operation, and all showed a pericholangitis to be present; no parenchymal lesion was demonstrated by routine staining methods.

Gall-bladder Diseases other than Acute Inflammation

The bromsulphthalein test was done in a further series of 23 cases in which disease of the gall-bladder was confirmed at operation but in which acute inflammation was absent. These included 20 cases of chronic cholecystitis (in some of which there was cholelithiasis), 2 cases of biliary colic with a stone impacted at the neck of the gall-bladder, and 1 case of volvulus of the gall-bladder with infarction. The test was negative in all these cases. The results of the test in all forms of gall-bladder disease studied are compared in table II.

Acute Intra-abdominal Conditions other than Biliary Disease

The results of the bromsulphthalein test in this series of 32 cases are shown in table III. Only 5 positive results were obtained. The 18 cases of appendicitis included 13 in which peritonitis was present; there was a positive result, a minor retention of 5%, in only 1 of these, an advanced case of three days' duration. 2 of the other positive results were associated with severe peritonitis, and 1 with intraperitoneal hæmorrhage.

TABLE II—RESULTS OF BROMSULPHTHALEIN-RETENTION TEST IN GALL-BLADDER DISEASE

Diagnosis	Positive	Negative	Total
Acute cholecystitis	22	1	23
Chronic cholecystitis	0	20	20
Gall-bladder colic, stone impacted at neck	0	2	2
Volvulus of gall-bladder	0	1	1
Total	22	24	46

Discussion

Bromsulphthalein is mainly excreted by the liver into the bile. It is uncertain whether the dye is taken up directly by the liver cells, or whether the Kupffer cells play an intermediary rôle; for there is prolonged retention when the reticulo-endothelial system is blockaded with indian ink. One might expect to find retention where uptake or excretion is impaired by liver parenchymal damage, obstruction in the biliary tree, or circulatory failure. In severe peritonitis, retention may be due to bacterial toxæmia, with subsequent impairment of the circulation and hepatic damage.

The consistently positive results described above in acute cholecystitis are possibly due to the inflammatory œdema in the region of the extrahepatic biliary tree. This leads to stasis, which may be reflected in retention of bromsulphthalein before latent or manifest jaundice is noted. The results of liver biopsy suggest that there may be a spreading cholangitis, with œdema, or a pericholangitis. In addition, by reason of lymphatic spread from the anatomically near and infected gall-bladder, the liver parenchyma may be damaged, thus favouring retention. A combination of these factors is not unlikely.

The information given by the test may be helpful in considering whether or not treatment should be initially conservative or surgical. There seems to be no contra-indication to surgery in an early case of cystic-duct colic or mild cholecystitis, provided there are no complicating factors, such as cardiac and renal disease.

However, mild symptoms with a relatively quiet abdomen may mask physical conditions which make dissection difficult and dangerous. In this series, with the 2 exceptions noted, the degree of retention has a truer relation to the severity of the local inflammatory lesion than a clinical impression. The following 2 cases illustrate this point:

Case 1.—A woman, aged 31, had attacks of biliary colic five years and a year before admission. Since the second attack repeated minor attacks had occurred, with a severe attack of cholecystitis for the two days before admission, associated with vomiting. Mild icterus developed. Associated with a bromsulphthalein retention of 60% the serum-bilirubin level was 2 mg. per 100 ml., the serum-alkaline phosphatase 22·5 units, and the thymol turbidity definitely positive. At operation the gall-bladder was found to be distended, tense, and œdematous, filled with purulent fluid, and surrounded

TABLE III—RESULTS OF BROMSULPHTHALEIN-RETENTION TEST IN INTRA-ABDOMINAL INFECTIONS OTHER THAN CHOLECYSTITIS

Diagnosis	Positive		Negative	Total
	Number	Retention (%)		
Acute appendicitis of all degrees	1	5	15	16
Perforation of peptic ulcer	0	..	9	9
Tubo-ovarian abscess with gross peritonitis	1	15	1	2
Subphrenic abscess	0	..	1	1
Acute jejunitis	1	10	0	1
Acute mesenteric adenitis	0	..	1	1
Perforation of rectum with fæcal peritonitis	1	15	0	1
Tubal endometriosis with free hæmorrhage	1	10	0	1
Total	5	..	27	32

by much œdema. No stone was found in the common bile-duct. Histologically the liver showed mild pericholangitis. Recovery took place after cholecystectomy, and bromsulphthalein retention decreased from 60% before operation to zero by the eighth postoperative day.

In this case the clinical course, and the observed degrees of bromsulphthalein retention were very similar.

Case 4.—A woman, aged 43, had complained of intermittent right hypochondrial pain for four years. There had been occasional bilious vomiting. The symptoms had been present as usual for a month before admission. On clinical examination the abdomen was surgically quiet, with no more than slight tenderness. Bromsulphthalein retention preoperatively was 55%. At operation very acute cholecystitis was found. The gall-bladder was thickened and hæmorrhagic, and histologically there were signs of acute inflammation supervening on a chronic cholecystitis. Many mixed stones were present in the gall-bladder. The liver showed round-cell infiltration of a chronic inflammatory type in the portal tracts. After cholecystectomy the bromsulphthalein retention fell to zero by the ninth postoperative day.

This case illustrates a possible use of the test in demonstrating an unsuspected acute cholecystitis.

In the more severe cases, and in those in which operation carries some risk, conservative treatment has become much more justifiable, and even preferable, with the use of the antibiotics, particularly aureomycin. Should the clinical condition deteriorate, operation may well become necessary. As Glenn (1946) points out, the correct procedure in each individual case—cholecystectomy or cholecystostomy—can only be decided at laparotomy.

Results given above suggest that the bromsulphthalein test ought not to be done after morphine has been given, and indeed that morphine is theoretically inadvisable in biliary colic. A trial of pethidine or of amidone should be made initially; and, if morphine becomes necessary, the addition of nitroglycerine (Watson 1952) may help to prevent spasm of the sphincter of Oddi with resultant biliary retention and possible pancreatitis.

Summary

46 cases of gall-bladder disease and 32 cases of acute non-biliary intraperitoneal infections have been examined with the bromsulphthalein test, the technique being described.

A false positive result may be obtained in the presence of morphine, which increases the pressure in the biliary ducts by causing spasm of the sphincter of Oddi.

There was retention of bromsulphthalein in 22 of 23 cases of acute cholecystitis, but not in gall-bladder disease without acute inflammation.

In acute cholecystitis the test gives information which may be of some value in diagnosis and in practical management.

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"So far as the medical members of the Union are concerned, it is no exaggeration to say that 75 per cent. of the claims emanate from treatment in hospitals in contradistinction to claims against General Practitioners or Consultants in their private capacity. For whatever reason, it is clear that the layman who resorts to hospital for treatment is looking upon the hospital staff as insurers of a cure, and if the slightest error, even though innocent, occurs, is only too ready to postulate a claim, often unfounded, for malpraxis. It is probably also true to say that with the complexity of modern medicine, hospitals may tend to be either insufficiently or inadequately staffed, with the result that too much responsibility is laid upon junior members of the staff, who, however willing, are not sufficiently experienced or trained to undertake certain duties imposed on them."—Annual report for 1953 of the Medical and Dental Defence Union of Scotland; p. 9.

NALORPHINE IN THE PREVENTION OF NEONATAL ASPHYXIA DUE TO MATERNAL SEDATION WITH PETHIDINE

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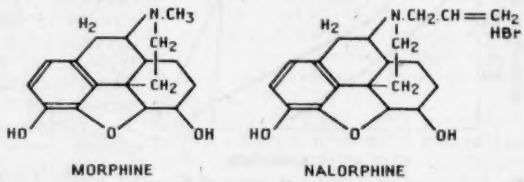
PETHIDINE and, to a lesser extent, morphine and its derivatives are administered as obstetric analgesics; and, although they bring relief to the mother, the price paid for their use is respiratory and circulatory depression in the newborn.

It is estimated that about 10–20% of the babies born with the aid of pethidine analgesia require resuscitation because their respiration is depressed. Hitherto the treatment of such depressed babies has been by mechanical stimulation, artificial respiration, and the administration of analeptics. A specific pharmacological antagonist to pethidine and the opiates has not been available. A compound with this property has recently appeared under the name of nalorphine, which is *N*-allylnormorphine hydrobromide. It is known commercially in Great Britain as 'Lethidrone' (Burroughs Wellcome) and in the U.S.A. as 'Nallene' (Merck). In this compound the methyl group attached to the nitrogen



atom (N) in morphine is replaced by an allyl group ($-CH_2.CH=CH_2$).

Unlike its parent substance morphine, nalorphine is not a potent analgesic. On the contrary, it antagonises the pharmacological actions of morphine and reverses the respiratory depression due to this drug (McCawley et al. 1941). Given in adequate dosage before the administration of morphine it can inhibit the latter's effect on respiration (Unna 1943). Nalorphine can prevent not only the respiratory depression produced by morphine and its derivatives but also that caused by synthetic drugs with a pharmacological action resembling that of morphine (Huggins et al. 1950, Smith and Gilfillan 1951). For example, it reverses the depressant effects of methadone ('Physeptone'), 'Dilaudid,' 'Metapon,' pethidine, and levorphan ('Dromoran'). Studies by Wikler (1951), Fraser et al. (1952), and Bornstein et al. (1953) show that in doses of 10–40 mg. nalorphine counteracts the respiratory depression produced by morphine and the above-mentioned drugs in man. It has been used successfully in the treatment of overdosage and of attempted suicide with them.

In subjects heavily narcotised with either morphine or similar drugs, nalorphine dramatically stimulates respiration, restores superficial and deep reflexes, and raises the lowered blood-pressure. The effect is often exerted within a minute or two. In heavily morphinised patients nalorphine also alters the electro-encephalographic pattern from that of deep sleep to that of the waking state (Eckenhoff et al. 1952) and in morphine addicts it evokes the typical abstinence syndrome (Wikler 1953). But its action is specific: it antagonises

the actions of morphine and pharmacologically related drugs but it is quite ineffective in combating respiratory depression due to barbiturates, anæsthetics, and physiological causes, and it cannot be used, like picrotoxin or methedrine, as a general analeptic. Administered alone in large doses it has a mild morphine-like action itself, but this is not seen when it is given in the appropriate dose as an antagonist to morphine and the opiates. No complications have been described so far from its use in man for this purpose.

Use of Nalorphine in Obstetrics

Nalorphine was first used for the prevention of respiratory depression in the newborn by Eckenhoff et al. (1953), who gave it intravenously in doses of 10 mg., from five to twenty-five minutes before delivery, to mothers who had received sedation with pethidine ('Meperidine'), seconal, and scopolamine. There was a significant reduction in the need for resuscitation and in the time taken for the newborn infants to gasp and breathe. Nalorphine was also injected in doses of 0·1–0·2 mg. into the umbilical-cord vein of 12 infants who failed to breathe within five to ten minutes of delivery and were believed to have apnœa from maternal sedation. The results were described as dramatic in 11 of the infants, respiration starting within half a minute of injection.

Design of Present Trial

The trial was designed to test whether nalorphine given to the newborn infant would rapidly abolish respiratory depression due to the sedation of the mother with pethidine. The respiration of 203 unselected and consecutive infants whose mothers had been given pethidine or 'Omnopon' during labour was carefully observed. The doses and times of administration of the drugs were recorded, and the fœtal heart-rate was counted every fifteen minutes for two hours after giving the drugs. After delivery the cord was not cut until the child had gasped and cried, and the times when it did this were noted. If the child did not gasp within ten seconds, nalorphine 0·5 mg. was injected into the umbilical vein. If the child did not cry within two minutes and the cord was still pulsating the dose was repeated.

The control consisted of 205 unselected consecutive obstetric cases, 7 of which were twin births, making the total number of infants born 212. Pethidine and sometimes omnopon were given to the mother during labour, but the infants were not given nalorphine. The effects of the drugs on the mother and child were observed; but, as this series was recorded primarily to assess the value of pethidine as an obstetric analgesic before nalorphine became available, the data on the respiration of the infants were not always complete. Strictly speaking the control series is not statistically comparable with the treated series, because the patients in the former were treated before nalorphine came into use. The two series are not strictly identical, as shown by the difference in incidence of pre-eclampsia and hypertension. Both treated and control series, however, represent a normal cross-section of cases seen in a modern maternity hospital. The obstetric histories of the two series are given in table I.

TABLE I—OBSTETRIC HISTORY

	Controls	*Nalorphine series*
Total number of infants	212	203
Antenatal complications:		
Pre-eclampsia and hypertension	24	33
Severe anæmia	4	8
Cardiac condition	4	7
Antepartum hæmorrhage	5	6
Tuberculosis	2	2
Labour complications:		
Forceps delivery	19	21
Cæsarean section	2	5
Breech delivery	11	7
Twins	7	2

There were 5 stillbirths among the controls and 2 in the nalorphine series (table II).

TABLE II—STILLBIRTHS

	Controls	*Nalorphine series*
Breech delivery	1	1
Hydrocephalus	1	—
Anencephalus	1	—
Death in utero	1	—
Strangulation by cord	—	1
Unexplained	1	—
Total	5	2

In the case of the unexplained death in the controls the fœtal heart showed evidence of distress between the first and second doses of pethidine. The necropsy report was: "Severe asphyxia with no evidence of intracranial hæmorrhage." Pethidine could not be excluded as a cause of death.

Asphyxia was diagnosed in the controls if breathing did not start within two minutes, if active resuscitation was necessary, and if the baby was recorded as "limp and slow to breathe." Active resuscitation included the use of oxygen, analeptics, and in some cases artificial respiration by rocking. In the treated series nalorphine was injected into the still pulsating cord if the infant did not breathe within ten seconds of delivery; it was thought that a normal infant should make an inspiratory effort within this time.

Results

Table III gives details of the controls. Neonatal asphyxia was present in 34 of 212 infants, and 31 of these required resuscitation.

Table IV gives details of the cases treated with nalorphine. The series included 203 infants, 28 of whom were given nalorphine because of asphyxia. In 12 of these active resuscitation was used. It was not thought justifiable to withhold it to see whether the babies would eventually breathe spontaneously.

It will be seen that in the control series 34 of 212 babies (16%) showed some degree of neonatal asphyxia. For the babies selected for treatment with nalorphine the corresponding figures were 28 out of 203 (13·8%). The incidence of neonatal asphyxia was therefore about the same in both series.

Of the 28 babies who received nalorphine 8 gasped immediately after the injection and 14 within half a minute. Hence within half a minute of the injection about 80% of all the treated infants had gasped. There are no corresponding figures for the controls.

Of the 28 babies who received nalorphine 16 (57%) cried within four minutes after the injection. Of the 21 controls for whom the information was recorded 8 (38%) cried within four minutes. There is a difference between the two percentages in favour of the babies treated with nalorphine, but statistically it is not highly significant ($P = 0·19$).

Active resuscitation was needed in 12 (43%) of the 28 babies who received nalorphine. In the controls resuscitation was necessary in 31 (91%) out of 34. Statistically the difference between these two percentages is significant ($P = 0·001$) in favour of the babies treated with nalorphine.

Discussion

The ideal obstetric analgesic—i.e., one that produces adequate analgesia in the mother without risk of respiratory depression in the newborn—has yet to be discovered. Morphine, pethidine, and related drugs all carry this risk for the infant:

In the present controls, whose mothers usually received pethidine, it was 16%.

Gilbert and Dixon (1943) state that 14% of infants whose mothers were given pethidine required resuscitation because of depressed respiration.

TABLE III—NEONATAL ASPHYXIA IN CONTROL SERIES (34 BABIES OUT OF 212)

Case no.	Dosage of pethidine (mg.)	Interval to delivery (hr.)	Type of delivery	Inhalation anæsthetic	Time to cry	Resuscitation	Remarks
4	100	3	S.V.D.	Gas + air	Slow to cry	Yes	Much asphyxiated, in oxygen tent several days; mother pre-eclamptic
25	100	4½	S.V.D.	Gas + air	Limp, slow to cry	Yes	..
31	100	1	S.V.D.	Gas + air	6 min.	Yes	..
41	100	16	S.V.D.	Gas + air	5 min.	Yes	..
43	100	2	S.V.D.	Gas + air	Limp	Yes	..
45	100	10	(1) Low forceps (2) Breech extraction	Gas + oxygen + ether	(1) 5 min. (2) 10 min.	Yes Yes	Twins
46	150	1½	S.V.D.	Gas + air	10 min.	Yes	..
51	300	13¾	Mid-cavity forceps	Gas + oxygen + ether	10 min.	Yes	..
53	100	2¼	A.B.D.	Gas + air	..	Yes	Responded very slowly to resuscitation
56	100	3¾	S.V.D.	Gas + air	Very limp, slow to cry	Yes	..
57	100	2¾	S.V.D.	..	Very limp, slow to cry	Yes	..
66	50	1¼	A.B.D.	Gas + air + chloroform	2½ min.	Yes	..
71	150	2½	Low forceps	Gas + oxygen + ether	2½ min.	Yes	..
76	100	2¾	S.V.D.	Gas + air	Limp, slow to cry	Yes	Premature
89	100	4	S.V.D.	Gas + air	..	Yes	Cord round neck, limp; responded slowly
110	200	4½	(1) Low forceps (2) Breech extraction	Gas + oxygen + ether	(1) Limp, slow to cry (2) Limp, slow to cry, cyanosed	Yes Yes	Premature twins
119	100	3¼	Forceps	Cyclopropane + oxygen	5 min.	Yes	..
121	100 + morphine gr. ¼	4	S.V.D.	Gas + air	3 min.	Yes	..
123	250	3	(1) Low forceps (2) Mid-cavity forceps	Cyclopropane + oxygen	(1) 10 min. (2) 5 min.	Yes Yes	Twins
128	100	2½	S.V.D.	Gas + air	3 min.	Yes	..
133	100	6	Low forceps	Cyclopropane + oxygen	..	Yes	Limp, responded well to resuscitation
145	50	2¾	A.B.D.	..	..	Yes	Limp, responded to resuscitation
154	100 + morphine gr. ¼	¾	S.V.D.	..	8½ min.	Yes	..
160	50	3	S.V.D.	Gas + air	5 min.	Yes	..
168	100	5	S.V.D.	Gas + air	3 min.	Yes	..
171	100	4½	S.V.D.	Gas + air	3½ min.	..	..
173	100	10¾	S.V.D.	Gas + air	5 min.	Yes	..
176	100	12¼	Low forceps	Pudendal block	3 min.	..	..
180	100	4½	Low forceps	Gas + oxygen + ether	3 min.	..	..
186	100	4	S.V.D.	Gas + air	5 min.	Yes	..
200	100	3¼	S.V.D.	Gas + air	Limp, slow to cry	Yes	..

A.B.D., anterior breech delivery. S.V.D., spontaneous vertex delivery.

TABLE IV—NEONATAL ASPHYXIA IN NALORPHINE SERIES (28 BABIES OUT OF 203)

Case no.	Dosage of pethidine	Interval to delivery	Type of delivery	Inhalation anæsthetic	Time to gasp	Time to cry	Resuscitation	Remarks
1	100	7 hr. 10 min.	Forceps	Cyclopropane + oxygen	2 min.	15 min.	Yes	..
15	Morphine gr. ¼	1¼ hr.	S.V.D.	Gas + air	2 min.	10 min.	Yes	..
24	100	1 hr. 40 min.	S.V.D.	Gas + air	Immediately	8 min.	Yes	..
27	200 + omnopon gr. ½ (twice)	2¼ hr.	S.V.D.	Gas + air	20 sec.	20 sec.	..	..
31	100	5¾ hr.	A.B.D.	Gas + air	25 sec.	1½ min.	Yes	..
32	100	50 min.	S.V.D.	..	Immediately	3½ min.	..	..
35	100	1 hr.	S.V.D.	Gas + air	?	1½ min.	..	..
51	200	2 hr. 10 min.	Low forceps	Gas + air	Immediately	2 min.	..	..
52	100 + omnopon gr. ½	27 hr.	S.V.D.	Gas + air	2½ min.	17 min.	Yes	..
69	200	3 hr. 40 min.	S.V.D.	Gas + air	Immediately	10 min.	Yes	Seconal given to mother
78	100	1¼ hr.	Mid-forceps	Cyclopropane + oxygen	2 min.	10 min.	Yes	..
86	300	3¼ hr.	S.V.D.	Gas + air	5 sec.	2½ min.	..	..
87	400 + omnopon gr. ½	2¼	L.U.S.C.S.	Cyclopropane + ether	17 sec.	2 min.	..	..
101	100	1¾	S.V.D.	Gas + air	8 sec.	1 min.	..	..
103	200 + omnopon gr. ½	4 hr. 20 min.	S.V.D.	Gas + air	½ min.	1 min.	..	..
108	500 + omnopon gr. ½ (twice)	1½ hr.	S.V.D.	Gas + air	5 sec.	1¼ min.	..	40 hr. in labour
115	100	2½ hr.	Low forceps	Cyclopropane	Immediately	15 min.	Yes	..
117	100	2 hr. 50 min.	S.V.D.	Gas + air	8 sec.	3¾ min.	..	..
118	100	3¼ hr.	S.V.D.	Gas + air	8 sec.	3¾ min.	..	2 doses of nalorphine
122	100	2½ hr.	S.V.D.	..	Immediately	Immediately	..	..
152	100	2 hr. 20 min.	S.V.D.	..	5 sec.	8 min.	Yes	2 doses of nalorphine
159	Morphine gr. ¼ + 'Avertin'	3¾ hr.	L.U.S.C.S.	Cyclopropane + oxygen	½ min.	15 min.	Yes	..
168	100	3½ hr.	S.V.D.	Gas + air	Immediately	2½ min.	..	..
169	100	½ hr.	S.V.D.	..	8 sec.	7 min.	..	2 doses of nalorphine
180	100	12¼ hr.	Low forceps	Cyclopropane + oxygen	20 sec.	1 min.	..	Seconal given to mother
182	100 + morphine gr. ¼	4 hr.	Low forceps	Gas + air	2 min.	15 min.	Yes	..
192	100	5 hr.	Low forceps	Cyclopropane + oxygen	Immediately	18 min.	Yes	..
196	Omnopon gr. ½	2 hr. 10 min.	S.V.D.	..	5 sec.	½ min.	..	..

A.B.D., anterior breech delivery. L.U.S.C.S., lower uterine segment cæsarean section. S.V.D., spontaneous vertex delivery.

Gallen and Prescott (1944), who believe that it is undesirable to administer pethidine within two and three-quarter hours of birth, give the figure as 9%.

Davis and Tupper (1949) also hold that asphyxia is more likely to occur if analgesics are given within two or three hours of delivery.

Cripps et al. (1944) record that 21% of infants born of mothers who were given pethidine did not cry immediately, and O'Reilly (1948) states that 15% of infants are born in a state of asphyxia.

Winters et al. (1951), who give pethidine intravenously for actual delivery, find that 7% of the infants show distress at birth.

Not all cases of neonatal asphyxia are due to maternal sedation. Possibly about a half are, although Roberts (1948) attributes only 5 out of 37 cases of asphyxia (14%) to sedation of the mother with 'Pethidine-Scopolamine.' It would not be justifiable to observe a control series of babies born without maternal analgesia to find the incidence due to purely obstetrical causes. Any drug that will diminish the occurrence of neonatal asphyxia due to sedatives and allow pethidine, morphine, and related drugs to be given freely whenever necessary, and at any time in labour, is a welcome addition to the obstetrician's armamentarium.

From this trial it is clear that infants born of mothers receiving pethidine analgesia do not need resuscitation so often if nalorphine is injected into the umbilical cord immediately after birth. This confirms the preliminary observations of Eckenhoff et al. (1953). Statistically it could not be shown that nalorphine materially altered the times taken to gasp and cry. Certainly within half a minute of injection 80% of all babies treated with nalorphine made their first gasp, but from the nature of the trial this observation was not controlled. When nalorphine was given to babies in need of resuscitation, the effect was often striking. Limp and asphyxiated before treatment, they gasped almost immediately after the injection of nalorphine. The effect was comparable to that seen after the intravenous injection of nalorphine into an animal narcotised with morphine to the point of stupor: within a few seconds it opens its eyes and within half a minute it is walking.

None of the treated babies showed any ill effects from the nalorphine. The dose, 0·5 mg. in 2 ml., was higher than that used by Eckenhoff et al. (1953), who injected 0·1–0·2 mg. into the infant's cord. It may well be that doses smaller than that used in this trial are sufficient, and we suggest that a dose of 0·25 mg. be tried. The dose given to the baby must be carefully distinguished from that given to the mother just before delivery; this is 10 mg. (Eckenhoff et al. 1953). It is likely that the most practical way of giving nalorphine would be directly to the baby and only when required. The baby's condition at birth can then be carefully assessed, and the cause of the asphyxia diagnosed if possible, before any more drugs are administered. The use of nalorphine should also permit the increased use of morphine, pethidine, and related drugs nearer to the time of delivery. Hitherto caution has been exercised in giving such medication within two to three hours of delivery and in repeating the dose even if the mother's condition warranted it. It is also possible that analgesia with morphine or with morphine and scopolamine might be used more often than it is with nalorphine at hand.

Once again it must be emphasised that nalorphine is valueless as an antidote for the barbiturates, anæsthetics, and cerebral depressants generally, and for the treatment of asphyxia due to purely obstetric causes. It is not a respiratory or cardiac stimulant.

Summary

Nalorphine ('Lethidrone') is a pharmacological antagonist to morphine, pethidine, and related drugs. Injected directly into the umbilical cord of babies born of women who have been given pethidine to relieve the pains of labour, it counteracts the depressant effects of this drug on the respiration of the newborn.

Under cover of nalorphine, morphine and its derivatives might be used more often in obstetrics, and they might be given to the mother at any time during labour without undue risk of neonatal asphyxia.

The help given by Dr. Helen Mair and Dr. Alison Fleming, house-surgeons at the Elsie Inglis Memorial Maternity Hospital, is gratefully acknowledged. The 'Lethidrone' used in this trial was supplied by Burroughs Wellcome & Co.

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SIDEROPENIC DYSPHAGIA

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THE following interim case-report is presented because it shows a phase of sideropenic dysphagia without anæmia. This, though well recognised in Scandinavia (see especially Waldenström and Kjellberg 1939, Waldenström 1946), receives little attention in this country, though it is mentioned by Franklin (1952).

Case-record

An unmarried woman first presented in June, 1946, at the age of 24, with six months' history of dysphagia with solid food, which stuck at the level of the cricoid. Her general condition was reasonable and her weight steady at about 133 lb. Her nails were flattened and her tongue was sore. A barium swallow showed no abnormality. A blood-count showed 5,100,000 red cells per c.mm., and Hb 10·92 g. per 100 ml. (70%). The red cells showed considerable hypochromasia, some anisocytosis, and occasional poikilocytosis and polychromasia. Paterson-Kelly (Plummer-Vinson's) syndrome was diagnosed and a course of oral iron, riboflavine, and phenobarbitone given.

A month later the patient reported that her swallowing was improving. At this stage she had 5,600,000 red cells per c.mm., and Hb 13·26 g. (85%), but a blood film closely resembled the previous one.

Five months after her original attendance there was considerable improvement in her swallowing, and she had 5,400,000 red cells per c.mm., and Hb 15·9 g. (102%). From this date until 1951 she did not report again.

In May, 1951, she said that for three months she had had trouble with swallowing. Her weight was now 122 lb. Her finger-nails were flat and broke easily, and her tongue was smooth and pale. She had 5,200,000 red cells per c.mm., Hb 14·4 g. (97%), packed-cell volume (P C.V.) 46%, mean

corpuscular volume (M.C.V.) 88 c.μ, mean corpuscular Hb (M.C.H.) 28 μμg., and mean corpuscular Hb concentration (M.C.H.C.) 31%. A stained film appeared normal. However, a more detailed examination revealed that her fasting serum-iron level was 93 μg. per 100 ml., and four and eight hours after a dose of oral iron her serum-iron level reached 392 μg. and 409 μg. respectively.

Barium swallow showing œsophageal web.

Treatment with oral iron was started again. Just over a month later her Hb was 17 g. (118%), but dysphagia was still present. A further six months' course of iron was begun, but the patient did not report again till 1953.

In February, 1953, she attended as an outpatient and said her symptoms had been present since her last attendance, and during the preceding three months her dysphagia had increased to include liquids as well as solids. Her tongue was partially denuded of epithelium, and she had koilonychia. Radiography after a barium swallow showed an anterior sideropenic web (see figure) at the level of the 7th cervical vertebra; so the patient was admitted for investigation. She was now found to have 5,200,000 red cells per c.mm., Hb 13·3 g. (90%), P.C.V. 40%, M.C.V. 77 c.μ, M.C.H. 26 μμg., and M.C.H.C. 33%, and slight anisocytosis, anisochromia, poikilocytosis, and polychromasia of the red cells.

Œsophagoscopy revealed a crescentic narrowing at the level of the cricopharyngeus muscle. This was dilated. No other abnormality was seen. Gastric analysis was normal. The fasting serum-iron level was 48 μg. per 100 ml., and four hours after a dose of iron the level was 180 μg. Despite the dilatation the dysphagia was not much improved. A prolonged course of oral ferrous gluconate with vitamin B was started.

Three months later swallowing was much easier and the tongue was no longer sore. The Hb was 15·9 g. per 100 ml. (108%), P.C.V. 50%, and M.C.H.C. 32%. Œsophagoscopy revealed a trace of the previous web. This was dilated.

By August, 1953, the patient reported that swallowing was much better and she was eating a normal diet. Her Hb was 14·6 g. per 100 ml. (99%), a stained blood-film was normal, and her fasting serum-iron level was 160 μg. per 100 ml. Œsophagoscopy still showed a slight web.

Comment

In May, 1951, and February, 1953, the serum-iron level was low although the blood picture showed no other gross abnormality. Dilatation of the web and restoration of the serum-iron level to normal has brought about symptomatic relief. Prolonged treatment with iron and a careful follow-up will be necessary. The possibility of postcricoid carcinoma, reported by various workers, including those previously mentioned, must be borne in mind.

This case is reported in the hope that in a similar case hysterical dysphagia will not be diagnosed before at least the serum-iron levels and a blood-count have been shown to be normal.

I am indebted to Mr. R. H. Franklin for permission to report this case.

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STARVATION AMINO-ACIDURIA

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In a previous investigation, during which three healthy persons were starved for three days, we were surprised to find on chromatograms of their third-day urines a strong ninhydrin-reacting spot which had not been present at the onset of the experiment. This was shown to be an amino-acid originally referred to by Dent (1948) as T-spot.

It has been found in the early morning specimens of about 10% of normal people, this phenomenon being a consistent finding in those affected and apparently being genetically controlled (Crumpler et al. 1951, Harris 1953). T-spot was later proved to be β-amino-isobutyric acid (α-methyl-β-alanine) (Crumpler et al. 1951, Fink 1951). Its origin is unknown, but clinical interest was aroused by the finding of increased quantities in the urine of some patients with advanced cancer and chronic leukæmia, the excretion apparently varying with the clinical condition of the patient (Fink 1951, Fink et al. 1951, 1952). It seemed to us that this finding might correlate with our observation, and for this reason the following experiment was devised.

Experiment

Fifteen people were starved for periods of from 36 to 108 hours, during which time they were allowed to drink water or soda-water as required and to smoke if they had done so previously. Total urines excreted in specified times were collected and stored in the refrigerator with a crystal of thymol as preservative. In all except our first two cases, where specimens containing 250 μg. nitrogen were used, volumes of urine passed in 2 seconds were taken from each specimen, spotted on to 20-cm. squares of Whatman no. 1 filter paper, and run as two-dimensional chromatograms with phenol-water and collidine-lutidine-water as solvents. The use of 2-second specimens of urine obviated the necessity for assessment of creatinine or total nitrogen content of the urines.

A spot appearing in the characteristic position of T-spot was thought to be β-amino-isobutyric acid for the following reasons:

(1) β-Amino-isobutyric acid (kindly presented to us by Mr. R. G. Westall) occupied a similar position on the chromatogram and reinforced the unknown spot when both were put up together.

(2) Hydrolysis with concentrated hydrochloric acid at 100°C for 24 hours did not change the chromatographic properties of the substance.

(3) Similarly, it was not affected by oxidation with 100 vol. (30%) hydrogen peroxide and 0·1% ammonium molybdate.

(4) "Copper runs," by the method of Crumpler and Dent (1949), left the unknown spots unchanged.

Results

The results are shown in the accompanying table. The subjects could be broadly classified into three groups:

(1) Natural excretors of T-spot (2 cases).

(2) "Latent" excretors of T-spot (9 cases).

(3) Non-excretors of T-spot (4 cases).

In type 1 there appeared to be a progressive increase in the intensity of the spot. Type 2 showed no T-spot in earlier specimens but increasing intensity beginning after 18–30 hours' starvation. No T-spot was found in the urine of type 3.

T-SPOT (β-AMINO-ISOBUTYRIC ACID) IN URINE BEFORE AND DURING STARVATION

Case no.	Age (yr.)	Sex	Urine		Time of appearance of T-spot (hr.)
			Control	Starvation	
1	20	M	−	+	12–24
2	27	M	+	+	..
3	27	M	−	+	12–24
4	26	M	−	+	..
5	29	M	−	−	..
6	14	M	−	+	12–36
7	24	M	−	+	..
8	21	M	+	+	..
9	21	M	−	−	..
10	19	M	−	−	..
11	26	F	−	+	18–24
12	20	M	−	+	18–24
13	23	M	−	+	24–30
14	18	M	−	−	..
15	26	F	−	+	18–24

Discussion

Our knowledge of the part played by β-amino-isobutyric acid in body metabolism is small, although Fink et al. (1951, 1952, 1953) have put forward some cogent reasons for its derivation from the pyrimidine, dihydrothymine. We were struck by the fact that the rats used in their experiments underwent a severe constitutional upset after the administration of various pyrimidines, and we wondered whether their findings might be affected by relative starvation. Examination of the pooled 24-hour urines of six male rats during 3 days' fasting enabled us to exclude this possibility. No T-spot was found at any time during the starvation, even though quantities containing 1250 μg. of total nitrogen were spotted on to the chromatogram.

Although so little is known about the origin of this substance, its occurrence in the urine is better documented.

Normal Subjects

About 10% of the population excrete relatively large quantities of T-spot and this is thought to be due to a renal tubular defect (Crumpler et al. 1951). Traces, however, are found in the urine of the majority of healthy people (Stein 1953). Lindan (1954) found an increased urinary excretion of T-spot in African natives during the "hungry season," although an assessment of controls working at the Medical Research Council station, who were well nourished, showed a similar increased excretion (Lindan 1954).

Liver Disease

Large quantities of T-spot and other amino-acids are found in patients with acute hepatic necrosis; lesser degrees of liver damage, including that following general anæsthesia, may lead to increased excretion of T-spot associated with either methyl histidine and cystine or with cystine alone (Dent and Walshe 1951). We could find no correlation between the excretion of T-spot and either of these amino-acids. If the amino-aciduria which we have described is due to an "overflow" following liver damage, it does not apparently produce the same type of response as that described by Dent and Walshe.

Lead Poisoning

Heavy concentrations of T-spot have been described in this condition, presumably due to renal tubular damage (Wilson et al. 1953).

March Hæmoglobinuria

Most cases of this syndrome show increased excretion of T-spot, associated constantly with abnormal amounts of cystine and occasionally with other amino-acids (Pare and Sandler 1954). In that this condition shows a lowered renal threshold to haemoglobin (Gilligan et al. 1941, Gilligan and Blumgart 1941), the amino-aciduria is again presumed to be due to a renal tubular defect.

Malignant Conditions

Fink and her colleagues reported increased excretion of T-spot in some patients with advanced carcinoma and chronic leukæmia (Fink 1951, Fink et al. 1951, 1952). We feel that this is of special interest because these patients are ill nourished. Further, it was found that the excretion of T-spot decreased or disappeared completely with an improvement in the patient's general condition. This fact could reasonably be explained by our finding of increased excretion of T-spot during starvation.

Summary

T-spot (β-amino-isobutyric acid) has been observed to appear after 18–30 hours in the urine of healthy people undergoing starvation.

The experimental and clinical implications of this finding are briefly discussed, and it is suggested that it would explain the intermittent excretion of this amino-acid in certain malignant conditions.

We wish to thank Dr. C. E. Dent and Dr. H. Harris for their valuable advice in the initial stages of this investigation. Prof. R. A. McCance kindly provided the urines from subject 6 and from the rats. We are grateful to the A.D.M.S., Home Counties, for permission to publish.

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ORAL TREATMENT OF PERNICIOUS ANÆMIA

WITH INTRINSIC FACTOR CONCENTRATE AND VITAMIN B_{12}

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CONSIDERABLE progress having been made in the isolation and identification of Castle's extrinsic factor, attention has turned towards the possibility of a similar definition of the intrinsic factor.

In the United States work by Glass et al. (1950, 1952) led to the suggestion that glandular mucoprotein, one of the components of gastric mucin, might be very closely related to, or even identical with, the intrinsic factor. In the United Kingdom Latner et al. (1953) subjected human gastric juice to preparative electrophoresis and found material with intrinsic-factor activity at both anode and cathode. The more active substance at the anode was shown to contain either a mucoprotein or a polysaccharide.

Glass and Boyd (1953) described experiments in which oral vitamin B_{12} was combined with various sources of intrinsic factor in the treatment of pernicious anæmia.

In one of their experiments a preparation was used which consisted of a concentrate of hog stomach in association with small doses of vitamin B_{12}. This preparation was produced in tablet form under the trade name 'Bifacton.' The daily administration of 2 tablets of bifacton had an effect equivalent to that of the daily administration of 1 unit of standard oral anti-anæmia preparation, as defined in the *United States Pharmacopeia*. An earlier report by Spies et al. (1953) had shown that bifacton had evoked striking hæmopoietic responses in 8 patients with pernicious anæmia, 1 with nutritional macrocytic anæmia, and 2 with tropical sprue. A dose of 6 tablets daily was recommended for the latter two conditions.

In view of these observations, we decided to ascertain whether this preparation would maintain proven cases of pernicious anæmia in full hæmatological and neurological remission. 20 patients who have now been so maintained for six months are reported on here. This work is being continued.

The Investigation

The 20 patients with pernicious anæmia were 8 men and 12 women. In all of them megaloblastic marrow reaction, histamine-fast achlorhydria, and the characteristic picture of the peripheral blood had been found, and initial treatment with liver preparations had produced the expected reticulocytosis. 3 patients (cases 6, 7, and 17) had subacute combined degeneration of the cord. Case 13 had active pulmonary tuberculosis and throughout the six months of the experiment was treated with streptomycin and *p*-aminosalicylic acid. The patients had been treated with either vitamin B_{12} or a refined liver extract for different periods before all the injections were stopped and treatment with bifacton was begun. Details of this previous treatment are given in the accompanying table.

Method of Study

In the preparation used each tablet of bifacton contains 1·5 g. of extract of hog pyloric mucosa and 7·5 µg. of vitamin B_{12} (cyanocobalamin). All other anti-anæmia treatment was stopped, and the administration of bifacton was started at once. No dietary restrictions were imposed. Ten patients (cases 1, 3, 7, 11–13, and 17–20) were given two tablets daily, and the remaining 10 patients four tablets daily.

The patients were closely supervised at a special clinic where they were seen at intervals of four weeks during the course of the experiment. Accurate blood examinations were made at the beginning of the trial and at intervals of eight weeks thereafter. A simple check of the hæmoglobin level was made with a Sahli hæmoglobinometer at the intervening interviews. On every occasion on which the patients were seen they were closely questioned about the appearance of any symptoms referable to the central nervous system, and the vibration sense was tested with a tuning-fork providing 256 vibrations per second (C above middle C).

Hæmatological Measurement

With a dry syringe 3 ml. of blood was removed from a vein in the antecubital fossa. The blood was added to the appropriate amount of dried oxalate mixture recommended by Heller and Paul (1934). All the specimens of blood were taken about midday before lunch.

Hæmoglobin was estimated by the alkaline-hæmatin method of Clegg and King (1942) using a Spekker photoelectric absorptiometer with a spectrum green filter ('Ilford 604').

The packed-cell volume was determined on the venous blood by centrifuging at 4300 r.p.m. (2500 *g*) for thirty minutes in a sealed 100-mm. Hawksley hæmatocrit tube of internal diameter 3 mm. No correction was made for the small volume of plasma trapped in the mass of red cells under these conditions.

Results

In the accompanying table the results are arranged to show the preliminary treatment before bifacton therapy, the results of the preliminary blood examinations made before bifacton therapy, and the results of blood examination after six months' treatment with bifacton.

Neurological state.—No patient complained of any new symptoms or of any worsening of any symptom referable to the central nervous system. No alteration in the vibration sensation was found on repeated examination in 18 patients, this number including 1 with subacute degeneration of the cord.

Patient 17, who had apparent loss of vibration sense at her preliminary examination, showed normal sensation at all subsequent tests. It is thought that this change was due to inadequate explanation of the nature of the test at the first interview and not to improvement in the condition of the central nervous system. Patient 7, with subacute degeneration of the cord showed diminished vibration sense in both feet at her preliminary examination. At subsequent testing her sensation slowly improved until when last seen she appeared to have normal vibration sense. Testing with

FINDINGS BEFORE AND AFTER BIFACTON THERAPY

Treatment before bifacton				Results of bifacton treatment							
				Hb (g. per 100 ml.)		Red-cell count		Packed-cell volume		Mean corpuscular hæmoglobin content	
Case	Remedy	Dose	Duration	Initial	6 months	Initial	6 months	Initial	6 months	Initial	6 months
1	Vitamin B_{12}	100 µg.	Every 3 weeks for 1 year	16·5	16·55	5·65	5·66	50·7	48·6	31·4	34·0
2	,,	50 µg.	,, 2 ,, ,, 1 ,,	15·45	15·9	5·35	5·0	47·3	48·5	32·7	32·8
3	,,	100 µg.	Weekly ,, 1 ,,	18·25	18·65	5·76	5·75	54·5	55·7	33·5	33·5
4	,,	100 µg.	,, ,, 1 ,,	13·6	13·65	4·05	4·95	42·5	44·2	32·0	30·8
5	,,	100 µg.	,, ,, 1 ,,	13·4	13·25	4·65	4·5	41·5	42·9	32·3	30·9
6	,,	20 µg.	,, ,, 1 ,,	13·2	16·05	3·8	5·6	40·9	49·8	32·3	32·2
7	,,	50 µg.	,, ,, 1 ,,	14·15	14·4	4·5	4·7	45·5	45·1	31·2	31·9
8	,,	50 µg.	Every 2 weeks ,, 1 ,,	13·95	15·4	4·45	4·8	43·8	48·0	31·9	32·1
9	,,	50 µg.	,, 2 ,, ,, 8 months	13·6	13·3	5·0	5·1	44·5	41·5	30·5	32·0
10	,,	100 µg.	Weekly ,, 2 ,,	13·4	14·55	4·05	4·85	43·8	44·2	30·6	32·9
11	,,	100 µg.	Every 2 weeks ,, 1 year	12·9	12·8	4·0	4·8	41·0	40·0	31·5	31·8
12	,,	100 µg.	Weekly ,, 1 ,,	14·5	14·6	5·3	5·15	45·0	43·9	32·2	33·2
13	Refined liver extract	2 ml.	Every 2 weeks ,, 1 ,,	13·75	15·35	4·8	5·1	44·5	46·8	30·9	32·8
14	Vitamin B_{12}	100 µg.	,, 2 ,, ,, 4 months	13·5	14·45	5·2	5·1	45·1	44·3	30·0	33·4
15	,,	100 µg.	Weekly ,, 9 ,,	13·15	14·3	4·6	4·6	41·0	44·0	32·0	32·5
16	,,	100 µg.	,, ,, 2 ,,	12·3	13·3	4·8	4·95	39·4	45·7	31·2	29·1
17	,,	100 µg.	Every 4 weeks ,, 1 year	16·0	16·2	5·4	5·5	49·5	49·4	32·3	32·8
18	,,	100 µg.	Weekly ,, 1 ,,	12·65	12·3	4·55	4·4	40·7	37·8	31·1	32·6
19	Refined liver extract	2 ml.	Every 3 weeks ,, 1 ,,	13·75	14·6	4·5	4·6	43·0	42·2	32·0	33·0
20	Vitamin B_{12}	100 µg.	Weekly ,, 1 ,,	14·05	14·05	4·9	4·9	43·0	42·2	32·7	33·3

graduated forks was not done, however, and thus no claims of improvement can be made.

General physical state.—There was no assertion of increase or decrease of well-being in 19 patients, but 1 patient stated that a repeated tendency for his tongue to become painful and his appetite to deteriorate when his next injection was due had now disappeared. All regarded the tablets as a more pleasant and convenient form of treatment than the repeated injections previously administered.

Discussion

The question which we have tried to answer is whether pernicious anæmia can be controlled by oral treatment with bifacton. The question of degrees of activity of a preparation is not one which can be answered in a short period of six months. The validity of our conclusion that bifacton, in the dosage used, provides adequate treatment for pernicious anæmia depends on the proportion of cases which would have been expected to relapse had the preparation been inert.

Schwartz and Legere (1944) studied 54 cases of pernicious anæmia and found that relapse might occur at any time between two and thirty-eight months after all anti-anæmia treatment had been stopped. About 33% of their patients relapsed during the first six months without treatment. A further 36% relapsed during the next six months, 24% during the second twelve months, 5% during the third year, and 1% thereafter. A relapse was defined as "an incapacitating illness with levels so low at times as to be barely compatible with life." The highest red-cell count accepted as evidence of relapse was 2,600,000 per c.mm. Strauss and Pohle (1940) induced relapse in 15 patients, a red-cell count of 4,000,000 or less per c.mm. being accepted as evidence of relapse. In 12 cases relapse took place within ten months of cessation of treatment, and in the remaining 3 cases after nineteen, twenty-six, and twenty-seven months.

The fact that no patient in the present series has shown any evidence of relapse after six months suggests that, for this length of time at least, bifacton provided adequate treatment for pernicious anæmia. We do not suggest that it should be used in every case of pernicious anæmia. We have already had experience of the type of patient who cannot be trusted to continue oral therapy unless under constant supervision, and we recognise that the complete control of pernicious anæmia afforded by repeated injections from the patient's doctor is not an advantage lightly to be abandoned. The cost of oral treatment with bifacton is about 3s.–10s. a week.

Summary

20 cases of pernicious anæmia, already in remission and satisfactorily controlled, were transferred to treatment with 'Bifacton,' an oral preparation containing vitamin B_{12} and intrinsic factor.

No evidence of hæmatological or neurological relapse was seen after six months' continuous treatment.

Bifacton has provided adequate treatment for pernicious anæmia for at least six months.

Our thanks are due to Dr. J. A. W. McCluskie, in whose blood clinic at the Western Infirmary, Glasgow, the work was done; Dr. Samuel Lazarus for helpful suggestions; and Miss N. Johnston for secretarial aid.

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Preliminary Communications

ISOLATION OF CASTLE'S INTRINSIC FACTOR

IT is now some twenty-five years since Castle and his colleagues postulated the presence of an "intrinsic factor" in normal gastric juice and that a deficiency in this factor occurred in patients with pernicious anæmia.[1–3] There have been a number of previous attempts to isolate this substance, but unfortunately they have not met with much success. We believe that we have now isolated it in a satisfactorily pure state and that it is mucoprotein in nature.

A method for the preparation of intrinsic factor concentrates from human gastric juice has already been described, in which a technique of preparative paper-strip electrophoresis was used.[4] The concentrates remained in solution in a buffer at pH 6·35 and were tested by the hæmatological responses produced in patients suffering from untreated pernicious anæmia after oral administration of the material together with vitamin B_{12}. Subsequently the electrophoresis method was applied to a concentrate derived from hog gastric mucosa. The buffer electrolytes in each fraction were removed by ultrafiltration and the solutions freeze-dried. The highly active solid material so obtained proved to be mucoprotein in nature.[5] Its chemical analysis indicated that it could not possibly be identical with so-called "soluble glandular mucoprotein."[6] This has already been pointed out elsewhere.[7]

We tested the material for intrinsic factor activity by determining its effect on the fæcal excretion of radioactive vitamin B_{12} administered orally.[8] The technique used was practically identical with one recently described.[9] 0·5 μg. of radioactive vitamin B_{12} was given orally and a determination made of the total radioactivity of the fæces for the subsequent six-day period. The procedure was then repeated giving the test material at the same time as the radioactive vitamin. A diminished excretion in the fæces was taken as evidence of intrinsic factor activity.

Making use of data obtained from a study of the variation in the solubility of the electrophoresis material with varying pH and in certain salt solutions, we have now succeeded in isolating the active mucoprotein from the crude extract without resort to any form of preparative electrophoresis. Full details of this isolation procedure will shortly be published. The major part of the intrinsic factor activity can in the first place be extracted by a suitable buffer solution at pH 6·35. The active fraction

TABLE I—ANALYTICAL DATA RELATING TO ELECTROPHORESIS AND EXTRACTION FRACTIONS

Preparation	% Nitrogen	% Hexosamine	% Methyl pentose as fucose	% Reducing sugar as glucose	% Tryptophan
Electrophoresis fractions	9·0–9·7	11·0–12·0	3·1–3·8	16–21	1·2–1·5
Extraction fraction	9·2	8·1	3·4	15·4	1·4

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finally obtained has proved easily soluble at pH 2·0, which is an additional indication that it is not identical with "soluble glandular mucoprotein." Chemical analysis has demonstrated a close similarity between our new material and the active fractions obtained previously by electrophoresis (see table I). Both methods have yielded fractions highly effective in diminishing the fæcal excretion of radioactive vitamin B_{12} administered orally. Typical results of such investigations are shown below (see table II). By comparing these findings

TABLE II—EFFECT ON RECOVERY OF RADIOACTIVITY FROM THE FÆCES BY ADMINISTERING ACTIVE FRACTIONS WITH AN ORAL DOSE OF RADIOACTIVE VITAMIN B_{12}

Material administered	Total radioactivity in fæces as % of B_{12} dose given	Diminished fæcal excretion as % of B_{12} dose given
0·5 µg. vitamin B_{12}	91	..
" " " " and 1 mg. of an electrophoresis fraction ..	56	35
0·5 µg. vitamin B_{12}	86	..
" " " " and 2 mg. of an electrophoresis fraction ..	56	30
0·5 µg. vitamin B_{12}	86	..
" " " " and 1 mg. of extraction fraction	55	31
0·5 µg. vitamin B_{12}	89	..
" " " " and 2 mg. of extraction fraction	44	45

with those given elsewhere,[9] and with our own dose-response data, we have concluded that our materials are some fifteen times more active than "fraction B" obtained by ammonium-sulphate precipitation of hog stomach mucosal extract.[10]

Examination by paper-strip electrophoresis has indicated that our most recently obtained material and our best electrophoresis fractions are essentially homogeneous. The behaviour of the former in the ultracentrifuge has been examined by Dr. R. A. Kekwick, of the Lister Institute. It has been shown to contain a small amount of protein of high molecular weight, which sediments rapidly. The remaining material, representing 95% of the original, appears homogeneous and has a molecular weight below 20,000. Our own analytical data would indicate a figure of the order of 15,000.

We have thus obtained, by different procedures, active fractions resembling one another very closely. The similarity relates to chemical analysis, behaviour during electrophoresis, and biological activity. We regard these facts taken together with the ultracentrifuge data as evidence of chemical purity.

It is a pleasure to express our thanks to Prof. J. B. Duguid for constant help and encouragement; to Dr. C. C. Ungley for allowing us to study patients under his care; to Dr. E. Lester Smith, of Glaxo Laboratories, for supplies of radioactive vitamin B_{12}; and to Dr. F. T. Farmer, and Mr. C. G. Clayton for advice and supervision of the radioactivity measurements. The hog mucosa extract was supplied by Dr. T. H. Jukes, of Lederle Laboratories Division, American Cyanamid Company. Our work is supported by a grant from the Medical Research Council. One of us (L. R.) is working under the tenure of a Luccock fellowship from the Medical School, King's College, University of Durham.

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ANTAGONISM BETWEEN PERCHLORATE, IODIDE, THIOCYANATE, AND NITRATE FOR SECRETION IN HUMAN SALIVA

ANALOGY WITH THE IODIDE TRAP OF THE THYROID

THE human parotid gland is known to secrete iodide, producing a saliva-to-plasma concentration ratio (S/P ratio) of about 30.[1] This concentration ratio is of the same order as that of the iodide trap of the thyroid, and both ratios are reduced by oral doses of thiocyanate or of perchlorate [2 3] and by nitrate. The following observations on the interrelationships between these anions in saliva show evidence of antagonism between them for secretion by the salivary glands. This phenomenon is of interest because the iodide trap of the thyroid and its inhibition by these anions may depend on a similar mechanism.

The observations were made on normal people and on patients undergoing treatment with radio-iodine. The technique of collecting saliva, and the estimation of the radio-iodine content are described elsewhere [2]; thiocyanate was estimated in plasma and saliva by a modification of the ferric nitrate method and by Aldridge's method.[4] The anions were given as oral doses of the potassium salt.

It has been found that nitrate, like thiocyanate and perchlorate, depresses the secretion of iodide in saliva. Nitrate, however, is less effective than thiocyanate and much less effective than perchlorate. Wyngaarden et al.[5] noted the same order of activity of these anions in discharging iodide from the iodide trap of the thyroid.

Thiocyanate, like iodide, is concentrated in saliva, the S/P ratio being about 20 from a normal resting plasma level of 0·2–1·0 mg. per 100 ml. Its secretion is inhibited by perchlorate, nitrate, and iodide, the order of activity being perchlorate>iodide>nitrate. Both perchlorate and nitrate depress the S/P ratio of thiocyanate to a greater degree than that of iodide—e.g., 700 mg. of perchlorate has simultaneously reduced the S/P ratio for iodide to 1·0–1·5 and that for thiocyanate to less than 0·5. We have not attempted to achieve a similar degree of inhibition either of iodide by thiocyanate and nitrate, or of thiocyanate by iodide and nitrate, since the doses required would be toxic. We have been unable to study the secretion of perchlorate or of nitrate, because we have not yet succeeded in estimating them in microgramme quantities. Perchlorate, however, appears in saliva after a dose of 250 mg., the S/P ratio being about 10 when estimated by a chromatographic method which is only crudely quantitative.

When the normal salivary thiocyanate level and the S/P ratio have been reduced by a dose of perchlorate, iodide, or nitrate, the salivary thiocyanate level can be restored to its original value by a suitable dose of thiocyanate. The S/P ratio, however, cannot be restored by this means and will, in fact, be reduced still further, because there is an inverse relationship between the S/P ratio for thiocyanate and the plasma-thiocyanate level.

These observations cannot be explained by changes in the rate of flow of saliva,[2] nor by reabsorption of water, since a dose of perchlorate which depresses the S/P ratio for thiocyanate to less than 1 has no effect on the secretion of phosphate or chloride. There is evidently antagonism between iodide, thiocyanate, perchlorate, and nitrate for secretion in saliva; the most likely mechanism is that

1. Honour, A. J., Myant, N. B., Rowlands, E. N. *Clin. Sci.* 1952, **11**, 447.
2. Rowlands, E. N., Edwards, D. A. W., Honour, A. J. *Ibid*, 1953, **12**, 399.
3. Stanbury, J. B., Wyngaarden, J. B. *Metabolism*, 1952, **1**, 533.
4. Aldridge, W. N. *Analyst*, 1945, **70**, 474.
5. Wyngaarden, J. B., Wright, B. M., Ways, P. *Endocrinology*, 1952, **50**, 537.

they compete as substrates for receptors on a protein which transports them across the salivary cells. The interesting observation that perchlorate can reduce the S/P ratio for thiocyanate to less than 1 shows that thiocyanate cannot diffuse readily, if at all, through the salivary cells.

We have so far studied the interrelations between these anions in saliva only, but a similar antagonism for secretion almost certainly occurs in some other exocrine glands. For example, iodide is known to be concentrated in gastric juice to about the same extent as in saliva,[1] and it has been shown that thiocyanate inhibits iodide secretion in gastric pouches in dogs.[6] It is also reasonable to suppose that these anions inhibit the iodide trap of the thyroid by a similar mechanism, since their effects on the iodide-concentration gradient between plasma and saliva and between plasma and thyroid are closely analogous.[2 3 5 7] This analogy is strengthened by our observations that bromide, methyl thiouracil, and mercapto-imidazole do not affect the salivary secretion of iodide or of thiocyanate.

We wish to thank Dr. F. H. Pollard of the Department of Inorganic Chemistry, University of Bristol, for suggesting the chromatographic method of estimating perchlorate.

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Medical Societies

LIVERPOOL PÆDIATRIC CLUB

Child Health in a Primitive Community

AT a meeting held on Feb. 19, Prof. R. W. B. ELLIS (Edinburgh) discussed the repercussions of introducing European medicine and education into populations with a very high infant mortality and limited agricultural potential. Interference with native custom and detribalisation were liable to cause unforeseen problems, at least until fresh equilibrium was reached. In applying European institutions such as infant welfare to predominantly rural communities in the tropics, it was essential to decide what part of European practice was fundamental and universally applicable, and what part had developed directly from local environment.

Thus in England, where the infant-welfare movement was largely the indirect outcome of the Industrial Revolution and of employment of women, one of the major aims had been to reduce infant mortality by encouraging breast-feeding, improving the standard of artificial-milk feeding, making clean milk readily available to the toddler, and providing a preventive service on the assumption that medical treatment was available elsewhere. In West Africa the problems were very different. Not only was breast-feeding the universal practice, but in many areas cow's milk was unobtainable, and unless the native custom of prolonged breast-feeding was followed the young child might receive little or no animal protein in the second and third years of life. It was usually impracticable to dissociate prevention from treatment except in the larger centres, while the need for vitamin supplements was far less urgent in the breast-fed infant constantly exposed to the sun than in the artificially fed infants in a northern climate. The African mother-infant relationship was physically much closer than in Europe, since the baby travelled everywhere on the mother's back. The sudden break came with weaning or the birth of another child, and the severest malnutrition was likely to be seen in children aged 2–5 years.

6. Mason, E. E., Kirschbaum, T., Collins, S. *Surgical Forum*, 1951, p. 58.
7. Wyngaarden, J. B., Stanbury, J. B., Rapp, B. *Endocrinology*, 1953, **52**, 568.

New Inventions

AN APPARATUS FOR STERILISING LOOPS

THAT the flaming of wire loops causes infective particles to be released into the air is well known.[1] The instrument here described was designed to prevent the possible infection of laboratory workers, particularly when handling tuberculous material. Many devices have been made which in some way enclose the bunsen flame, but with these there is the danger of living organisms being carried upwards by air convection currents.[2] In some of these instruments the aperture for the insertion of the loops is narrow and difficult to use.

The apparatus illustrated in fig. 1, consists of a mild-steel tube $7\frac{1}{2}$ in. long, with an external diameter of $\frac{5}{8}$ in., made of metal $\frac{1}{32}$ in. thick, and closed completely at one end. This tube is held at an angle of 20°–25° with the horizontal by two 'Terry' clips no. 1 sprung on to the side-arm of a stand made of 'Ecofix' $\frac{3}{4} \times \frac{3}{16}$ in. The side-arm is $7\frac{1}{2}$ in. long, the vertical bar 10 in. long, and the two strips forming the foot 7 in. long. The latter are bent to accommodate the nut and bolt fastening them to the horizontal extension (2 in. long) of the vertical bar. The handle, made of ecofix $\frac{1}{2} \times \frac{1}{8}$ in., is fastened to the vertical bar by the same nut and bolt carrying the side-arm. The foot-pieces are opened to an angle of 110° to allow the bunsen burner to stand immediately under the middle of the tube. The bunsen burner may be of the ordinary type (preferably with the large-bore tube), the "batswing," or the 'Meker' type.

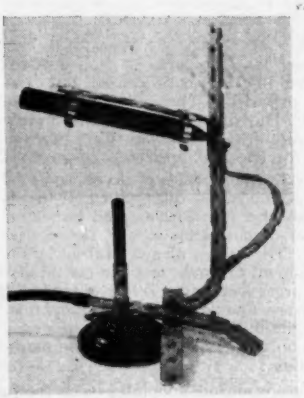

Fig. 1.

The burner is placed under the centre of the tube until at least a 2 in. section glows red-hot. Loops may then be held either in contact with the inside of the glowing section of the tube, or rested in the tube with the handle supported by the mouth of the tube. The loops will glow quite quickly even if held in the centre of the tube and out of contact with the wall.

Tests were made in the apparatus firstly with a strain of *Escherichia coli*, secondly with a B.C.G. strain of

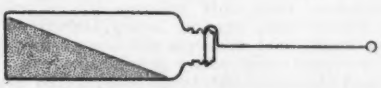

Fig. 2.

Mycobacterium tuberculosis, and finally with a strain of *Bacillus subtilis*. For the tests with *E. coli* and *B. subtilis* two dozen special bottles with loops were prepared. Twenty-four pieces of loop wire ('Nichrome' gauge 22 S.W.G.) 6 in. long were made with loops at one end. From a sterile agar slope in a 1 oz. bottle ("universal container") the cap was removed, and the wire was wrapped round the neck of the bottle to give a projecting loop of

1. Anderson, R. E., Stein, L., Moss, M. L., Gross, N. H. *J. Bact.* 1952, **64**, 473.
2. Winner, H. I., Quiney, A. *Lancet*, 1953, **i**, 376.

2 in. (fig. 2). The loop was then sterilised in a flame, dipped into a thick suspension of *E. coli* in broth, and plunged into the hot apparatus, the neck of the medium bottle being in contact with the opening of the metal tube. All these slopes remained sterile after forty-eight hours' incubation at 37°C.

For the test with the B.C.G. strain the same apparatus was used, except that the medium was Löwenstein-Jensen and that the wire loop was finally cut off the bottle with sterile scissors and dropped into Kirschner medium. All these media remained sterile after incubation at 37°C for eight weeks.

Thus it appears that the column of air inside the tube remains comparatively still, and that no living organisms escape from the tube. It is suggested that the loop handles be fitted with heat insulators at their ends, and that, after being incinerated in the apparatus, the shank of the handles be passed through the open flame.

I am grateful to Mr. E. L. P. Tugwell, of the photographic department of the Radcliffe Infirmary, for the photograph.

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Reviews of Books

Anoxia of the Newborn Infant

A Symposium organised by the Council for International Organisations of Medical Sciences. Oxford: Blackwell Scientific Publications. 1953. Pp. 227. 27*s.* 6*d.*

MANY original thinkers whose work is well known internationally took part in this conference, but the meetings were held in private. This account of the proceedings will mitigate the disappointment of many who were not present, and clinical and scientific observer alike will find here food for thought concisely presented.

Though anoxia is usually the final cause of death, most of the contributors to this symposium disregarded it as a secondary agonal effect of another lethal lesion, and restricted themselves to consideration of how anoxia may threaten a baby's chance of survival. The causes of neonatal asphyxia often operate before the moment of birth, and the continuity of oxygenation in the birth process and after is fully discussed; but the late effects of severe anoxia in the survivors has not been given a place. The omission of this controversial but important point is the only criticism which can be made of this well-planned symposium.

This new and largely unexplored specialty sets fresh problems in physiology, pathology, and biochemistry, and it is easy to understand why therapeutic results remain relatively unimpressive. The deficiencies of clinical assessment are apparent to all who have had experience in managing the asphyxiated infant. The diagnosis often remains in doubt until necropsy, and even then it may be difficult to determine histologically whether, for example, lung alveoli have never been ventilated or whether they have suffered secondary resorption collapse. Pathologists are not yet agreed on the ætiology or the significance of hyaline membrane as a cause or a result of anoxia, nor can the development of an intraventricular hæmorrhage in a premature infant be related in time to an episode of asphyxia. It is fitting therefore that this volume should enunciate problems rather than present cut-and-dried solutions. But many traditional concepts are swept away. The value of accepted respiratory stimulant drugs is discounted, and the impossibility of judging the degree of anoxia by the appearance of the skin is emphasised; and the ability of the child—particularly the very premature—to exist anaerobically, at least for a time, raises a whole mountain of speculative thinking.

Électrocardiographie clinique

J. LENÈGRE, professeur à la Faculté de Médecine de Paris; G. CAROUSO, chef du laboratoire d'électrocardiographie; H. CHEVALIER, ancien chef de clinique à la Faculté de Médicine de Paris. Paris: Masson. 1954. Pp. 810. Fr. 7600.

THIS exposition of cardiography is on the design of an atlas, but an atlas of an unusually elaborate and comprehensive kind. At the beginning of each section there is a short theoretical and general discussion; but apart from this, the subject is dealt with entirely by the presentation of actual cases. With the tracing of each case goes a short account of the clinical and X-ray findings, and often other information, including the necropsy report. The features of the electrocardiogram are then described, interpreted, and commented on. Nearly a quarter of the whole book is concerned with coronary insufficiency in its various forms, and about an eighth with the arrhythmias; ventricular hypertrophy is fully described, and for each electrocardiogram the electrical axis of Q R S and T is calculated. On the other hand, there is no actual section dealing with the relation between the electrocardiogram and the heart's anatomical position. The tracings are excellent throughout, and, though the method of presentation makes for hard going, the matter has permanent value. This seems one of the best contributions ever made by the French school of cardiology.

Advances in Virus Research

Editors: KENNETH M. SMITH, virus research unit, Molteno Institute, Cambridge; MAX A. LAUFFER, department of biophysics, University of Pittsburgh, Pennsylvania. New York and London: Academic Press. 1953. Pp. 362. $8.00.

THIS is the first of a series of annual publications containing articles on different aspects of plant, bacterial, and animal viruses. The field included is thus a corner of that formerly covered by the *Annual Review of Microbiology*, but the material is examined under a higher magnification. Essentially, therefore, this is a book written by research-workers for research-workers.

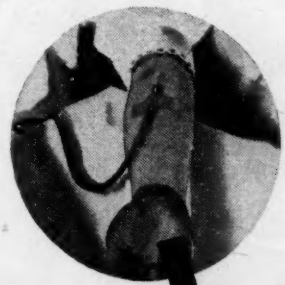
This volume opens with the inevitable but well-written account of the multiplication of bacteriophages, by H. T. Epstein. Surprisingly, almost the entire article is devoted to the lytic bacteriophages, and lysogenic bacteria receive only a bare mention. C. W. Bennett writes on interactions, particularly cross-protection, between plant viruses, and L. M. Black contributes an interesting essay on the transmission of plant viruses by cicadellids. G. H. Bergold writes of insect viruses, and W. Henle has a long and detailed account of the present state of knowledge of multiplication of influenza virus. J. L. Melnick discusses the impact of tissue-culture techniques on research on poliomyelitis. D. G. Sharp describes in some detail methods of purification of animal viruses and some properties of the purified viruses. And finally R. Markham writes enlighteningly on virus nucleic acids.

Those who write reviews of this kind must sometimes find themselves blinded by all the knowledge they have uncovered. One hopes, however, that scientists some little distance away may find the light not too dazzling, but sufficiently illuminating, to help them in their researches.

Disorders of the B'ood (7th ed. London: J. & A. Churchill. 1953. Pp. 856. 63*s.*).—"The preparation of a textbook on hæmatology," Sir Lionel Whitby and Dr. C. J. C. Britton admit in the preface to their new edition, "is now a tremendous task." And it is a task which the authors of a standard work must begin again the moment it is finished. This new edition has been extensively revised, and there are additions to the chapters on hæmopoietic metabolism, therapeutics, and the purpuric and hæmorrhagic diseases. Cytochemistry and biochemistry have called for an entirely new chapter, and new methods in technique have enlarged the whole work. There are besides 8 new plates and 12 new figures in the text. The authors bring their vast subject up to date at the middle of 1953.

Pneumoconiosis Abstracts, vol. I (London: Sir Isaac Pitman & Sons. 1953. Pp. 347. 63*s.*).—This is the first of two volumes which together are to contain all the abstracts of papers relating to pneumoconiosis which have been published in the *Bulletin of Hygiene*, from its first issue in 1926 to the end of 1950. This volume contains all those which appeared up to 1938. The abstracts have been selected from the mass of other topics dealt with in the *Bulletin* by Dr. E. L. Middleton, and the book is pleasantly produced. It will be useful to workers in this field to have this material so conveniently gathered together.

POST-PARTUM HAEMORRHAGE?



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THE LANCET
LONDON: SATURDAY, MARCH 6, 1954

Treatment of Aneurysms

ANY operation for aneurysm has to avoid, on the one hand, gangrene, which is likely to follow elimination of a main artery in the absence of adequate collateral circulation, and, on the other hand, incomplete cure and early recurrence when the continuity of the main vessel is conserved. These are the rocks on which the most careful plans of treatment have foundered.

That the older surgeons knew the importance of the collateral circulation is evident from the pains they took to favour its development by such means as prolonged or intermittent compression of the main artery, or incomplete ligature of the vessel. In recent years sympathectomy has usually been done for this purpose, in association with a ligature operation or excision of the aneurysm. ROB [1] recommends that sympathectomy should be done at the time of the main operation, since the resulting vasodilatation is greatest in the first forty-eight hours, after which it rapidly decreases, and the risk of gangrene is greatest in the first hours after an aneurysm has been excised. Danger to the collateral circulation is least in operations where the aneurysm is directly attacked. Excision is the treatment of choice for the smaller and the more peripheral aneurysms; but it may not be feasible with false aneurysm in whose walls important structures such as nerves are inextricably incorporated. The endoaneurysmal operations invented by MATAS [2–4] avoided both the dangers to the collateral circulation inherent in ligature operations and the risks to nearby structures involved in excision of the sac. MATAS [4] has said of his first endoaneurysmorrhaphy, in 1888:

> "The success of this procedure was strange to me because I had never seen it performed. I had read of no instance in which bleeding had been stopped by suturing the intrasaccular sources of supply to the aneurysm. . . . In earlier days, when everything had failed to cure an aneurysm of the great arteries, the only recourse was to amputate; at least that was the general opinion, sustained by the great authority of such men as Percivall Pott, who advocated amputation in aneurysms of the extremities. No one used sutures for the control of hemorrhage, everyone ligated. And everyone was surprised that I had secured complete arrest of the aneurysm by simple intrasaccular sutures."

The obliterative endoaneurysmorrhaphy of MATAS shared some of its advantages with the older practice—inelegant but sometimes successful—of opening the sac and, after evacuating the clot, cauterising the walls, which were left to heal and obliterate the sac by granulation. In the operation of reconstructive endoaneurysmorrhaphy, however, MATAS introduced another principle into the surgery of aneurysm—that of preserving the blood-flow through the aneurysmal segment and thus retaining the artery as the main source of blood-supply to the limb. This principle underlies the spectacular methods of vascular surgeons today. An arterial wall reconstructed from the wall of the aneurysm often cannot withstand the arterial pressure, and the aneurysm recurs; so surgeons are now increasingly applying free blood-vessel grafts either to replace an excised aneurysmal sac or as a by-pass after obliteration of the sac. Such operations, with suture by the technique which CARREL [5] perfected as long ago as 1908, have yielded impressive results. For the arteries of the limbs autogenous vein grafts are suitable. Such grafts have the advantages of being always available from the patient's own saphenous or external jugular vein, whose sacrifice causes no inconvenience, and of requiring no special apparatus for preparation and preservation. They also remain alive and may be less prone to later degeneration than preserved arterial homografts. COHEN [6] has drawn attention to the way in which a grafted segment of vein becomes "arterialised" under the impact of the arterial blood-pressure and successfully sustains the functions of the excised artery.

Many of the most dangerous aneurysms affect the thoracic and abdominal aorta, whose size precludes replacement by any autogenous vein graft; but now that methods have been devised for preserving human arteries, reports of successful extirpation of abdominal and thoracic aneurysms with replacement by arterial grafts are becoming almost commonplace. BROCK [7] described the case of a 50-year-old woman in whom a huge aortic aneurysm filling the whole abdomen was successfully resected. The aorta was excised from just below the renal arteries, together with the proximal ends of both common iliac arteries, and continuity was restored by inserting a homograft, 10 cm. long, consisting of the lower part of the abdominal aorta and its bifurcation; this graft had been preserved for nineteen days in a balanced salt solution.[8] After operation nutrition remained normal in the lower limbs, both of which had excellent pulses. ROB [1] reports nine resections of aneurysms with restoration of continuity by an artery graft; four of the aneurysms were peripheral and five aortic. One patient died, but the other eight are alive and well with patent grafts. ROB now prefers to bank arterial grafts by freeze-drying,[9] whereby the grafts can be stored indefinitely at room-temperature and transported in a sealed glass tube without any special precautions. HELDEN et al.[10] report two successful

1. Rob, C. G. *Arn. R. Coll. Surg. Engl.* 1954, **14**, 35.
2. Matas, R. *Med. News, N.Y.* 1888, **53**, 462.
3. Matas, R. *In* Keen's Surgery. Philadelphia, 1914; vol. 5, chap. 70.
4. Matas, R. *Surgery*, 1953, **34**, 972.
5. Carrel, A. *J. Amer. med. Ass.* 1908, **51**, 1662.
6. Cohen, S. M. *Ann. R. Coll. Surg. Engl.* 1952, **11**, 1.
7. Brock, R. C. *Proc. R. Soc. Med.* 1952, **46**, 115.
8. Gross, R. E., Bill, A. H. jun., Pierce, E. C. *Surg. Gynec. Obstet.* 1949, **88**, 689.
9. Marragoni, A. C., Cecchini, L. P. *Ann. Surg.* 1951, **134**, 977.
10. Helden, R. A., Kirklin, J. W., Gifford, R. W. jun. *Proc. Mayo Clin.* 1953, **28**, 707.

resections of aneurysms of the abdominal aorta with replacement by Y-shaped aortic grafts. In these operations the aorta has been clamped for as long as $1^3/_4$ hours, and the inferior mesenteric artery divided at its origin; and yet the nutrition of the lower limbs and the colon has been unimpaired.

Such results could have been achieved only by sure judgment and impeccable technique in centres with all the facilities of modern anæsthesia. Before long, however, excision of aneurysms with restoration of continuity is likely to become the concern of general surgeons. At present the chief limiting factor is the scarcity of human arterial grafts. Deep-frozen grafts are probably not viable and act simply as a scaffolding on which the tissues of the host eventually reconstruct a living artery. Thus it may prove possible to apply instead grafts of synthetic material: the success of acrylic replacements of bone and of the lens encourage this hope. At present those segments of the aorta which give rise to vital branches—such as the great vessels at the root of the neck, the cœliac axis, and the renal and the superior mesenteric arteries—can only be treated by conservative surgery.[11] Where these sites are involved, the sac may be reinforced and reduced in size by wrapping it with 'Polythene'-'Cellophane,' or intrasaccular thrombosis may be promoted by introducing wire into the aneurysm.

Already the new surgery of aneurysm is of great practical importance. Syphilitic aneurysms are becoming comparatively rare; but arteriosclerotic aneurysms are becoming commoner, as also are mycotic aneurysms secondary to bacterial endocarditis now that this can be cured by penicillin. In times of peace traumatic aneurysms are rare, at least in countries where the dagger and the shotgun are not normally the arbiters of disputes; but wars have always been potent causes of aneurysms. Should the need again arise, military surgeons will be better equipped than ever before to mitigate the heavy loss of life and limb from peripheral vascular injuries.

Prescribing Habits

THE cost to the nation of prescriptions under the National Health Service now exceeds £1 per head of population per annum. This heavy outlay is generally agreed to be excessive; but on the best ways of curtailing it there is less agreement, since no-one can claim to have grasped the relative importance of each of the many causes. On the patient's side there is commonly a disposition to take whatever can be got under the terms of the service, including household medicaments which the more public-spirited will buy for themselves. The attitude of "I am paying for this service, and so I'll use it whenever I can" is not easily countered, except by mandate, which is here largely impracticable, or by propaganda aimed at showing that frittering away money on inessentials may delay the provision of essentials.[12] Propaganda of this sort—as of any sort—yields no quick returns; and hopes of reducing the cost are therefore centred on the doctor.

Attempts to influence prescribing habits have included the Cohen Committee's classification of proprietary drugs, the periodical publication by the Ministry of Health of *Prescribers' Notes*, and the issuing of a pamphlet in which the cost of *National Formulary* and proprietary preparations is compared. Such publications have two purposes: first, to discourage the prescribing of substances that are foods or toilet preparations rather than medicines, or which, if they are medicines, are not of proven value; and secondly to encourage the least expensive of two or more equivalent preparations. The duty of preventing excessive prescribing lies more directly with the local medical committee, which is, however, seriously handicapped in this task. Clearly it can detect, and deal with, only very gross cases; yet gross over-prescribing is exceptional, and substantial saving depends rather on checking the more prevalent mild over-prescribing—which the committee, whose inquiries are necessarily retrospective and without first-hand clinical knowledge, neither can nor should try to investigate. That moderate over-prescribing is prevalent is suggested by the wide difference in average costs between different areas. Figures lately issued by the Joint Pricing Committee for England for last May show that the average cost of prescriptions per person was 21·35*d.*; but in the different executive-council areas the cost ranged from 12·96*d.* in a country area to 33·93*d.* in a town. The lowest figure is not necessarily the best; but such a big discrepancy does emphasise the need to look into the causes of over-prescribing and possibly under-prescribing as well. Something more may be learnt of these causes from the plan of the Department of Health for Scotland to issue periodically records, covering a month in each quarter of the year, of each doctor's average cost per prescription form and average cost per patient, together with corresponding averages for the whole area and the whole country. These figures will be valuable in enabling the practitioner to compare his average with his colleagues'.

But even if we knew the cost of drugs for each doctor, and the preparations prescribed by each doctor, we still could not always say that the prescribing habits of one were reasonable and those of another unreasonable. In the first place we have no norm, since the circumstances of hardly any two practices are the same. Secondly, we have only a flimsy idea of the forces behind prescribing habits—whether "placebos" are prescribed to save time in explanation or from conviction of their merit, whether 16 oz. of a mixture is prescribed instead of 12 oz. to defer a further consultation or because the patient is thought to need that amount, whether a particular proprietary substance is prescribed because of the patient's demand or because its name is more memorable than that of the official equivalent, and so on. At present we see prescribing habits in the mass; and if they are to be further influenced they must first be studied in the particular. Such a study could not suitably be undertaken by an official body; but it could well be sponsored by the College of General Practitioners. There is little, if any, place for further saving by the device of regulation, since this would encroach on professional freedom. On the other hand, there is much room for voluntary saving; and such an investigation as we have suggested, undertaken by general practitioners, would inform practitioners of the best, as well as the worst, habits of their colleagues.

11. See *Lancet*, 1952, ii, 233.
12. See leading article, *Ibid*, 1953, ii, 815.

The Hospital Makes Friends

THOSE who look after the sick in hospital—whether they are doctors, nurses, admission clerks, porters, wardmaids, or kitchen staff—may develop a quality which is on the borderline between a strength and a weakness: they may become so engrossed in what they are doing for the patient that they do not stop to consider what the patient is thinking about them. Many of them, indeed, would be shocked at the suggestion that they should care for any such thing, especially if the patient's thoughts were likely to be unflattering. Yet the patient's well-being inevitably depends in part on what he thinks of the hospital; and, for him, "the hospital" is not the building, however modern, nor the equipment, however glorious, nor even the skill, however precise, but the people he encounters when he crosses the threshold.

Many hospitals are so well aware of this that the patient is sure of attention, warmth, and kindness from the moment he arrives until he is ushered out in the care of his friends. In others it remains one of the mysteries of the craft of healing which the staff have failed to master, or even perhaps to study. In this matter it is quite possible for one department of a hospital to be out of step with the rest: thus the sanatorium which sends out the regulations quoted in our correspondence columns may well be humane and up to date in other ways. Yet this unimaginative leaflet must have destroyed the confidence of many a patient at the outset, and made it almost impossible for the medical and nursing staff to establish the mood of friendly coöperation in which arrest of tuberculosis is best achieved.

The Portsmouth Group Hospital Management Committee believes, with reason, that in its hospitals this aspect of the craft is, in fact, constantly studied by superintendents, hospital secretaries, matrons, records clerks, and others, and that all these officers have already achieved much. But nearly every good thing could be a little better, and the committee thinks that there is scope for improvement, not only in the personal relations made with the patient, but in the relations of the hospitals with the public generally, in which personal relations play so important a part. The committee has lately adopted a report on this subject, prepared by Mr. E. H. HURST, its secretary. In this he mentions some ways in which a patient may be given an unfavourable impression—by a superior, impersonal, or unsympathetic attitude among those he encounters; by apparently unnecessary or aimless waiting; by being passed from one person to another without proper guidance; by finding that people with whom he wants to discuss important matters or complaints are not accessible; and by a lack of personal neatness in the staff. This last point is one not often aired. Nurse's uniform, of course, is nearly always neat; and a white coat hides many personal vagaries of dress among the doctors. The committee has overcome the difficulty among clerical staff by providing overalls for those who come into touch with patients. The report draws particular attention to the good personal relations which can be fostered by well-mannered helpful telephone operators, capable of transmitting messages accurately. Mistakes in messages about patients can cause much needless anxiety, and moreover they sow seeds of mistrust in the hospital service generally. Some 28,000 patients are admitted yearly to the Portsmouth group of hospitals, and 48,000 new outpatients are seen in the outpatient department; and that means that, in any one year, one person in every eight in the area comes in contact with the hospital. If visitors (two to each patient every visiting-day) are taken into account, at least 50,000 more people see something of the working of the hospital during the year; and every one of these, as well as every patient, contributes his grain of opinion to the hospital's reputation. It is essential, then, the report suggests, that inquirers and visitors should not only get their messages correctly, but that they should be received sympathetically, dealt with civilly, and given all proper help and guidance when they come into the hospital; and this calls for "an alert, smart, courteous and knowledgeable porter staff." Some hospital porters are all these things; others, however, can be very disagreeable indeed, and can do much, even in the course of a single afternoon, to destroy a hospital's reputation for humanity.

The Ministry of Health has proposed that every patient leaving hospital should be given a "suggestion" form to be filled in and forwarded to the group secretary. On it he should set out all comments he wants to make about the hospital service or any ideas for improving it. The Portsmouth report endorses this proposal, but suggests that the forms should properly go to the house-committee of the hospital rather than to the group secretary. Nevertheless, it proposes that they should come to the group offices for the first three months, so that the management committee can form a reasonably clear picture of the sort of suggestions patients make, and take any necessary action on them. Complaints should be dealt with quickly and sympathetically. Some will be foolish and unjustified (since patients are human and not always in the right); but these should be given as much serious attention as a justified complaint, and it should be somebody's business to give the patient a careful explanation, so that he is not left with a sense of grievance; for it is impossible to achieve good relations with the public if there are among them those whose complaints have not, or apparently have not, been properly dealt with. A patient who makes a justified complaint must be able to feel that every effort is being made to see it does not happen again. Evidence of good public relations, of course, are the expressions of thanks and appreciation which are regularly received in the hospitals, and which get far less publicity than complaints. Good relations are likewise encouraged by the formation of a league of friends; and perhaps there is no better means by which a hospital and its public can get to know each other. The report also draws attention to the value of an "open day," to be held at each hospital once a year; and to the gain in friendship which comes from encouraging tours of inspection by parties of children, students in training for teaching, or for architecture, and by doctors and senior nurses from other groups or other countries. The Ministry of Health and the King's Fund from time to time second nurses to the Portsmouth hospitals to get special practical experience; and these, too, are made welcome.

The relations of hospitals with general practitioners are also considered in the light of Dr. STEPHEN HADFIELD'S study [1] last year. He found that one doctor in four, of those he questioned, thought that hospitals kept patients for treatment longer than necessary; but more than half of these doctors did not mind the hospitals shouldering this extra burden. Some complained that there was delay in getting early treatment and advice for new and important cases because outpatient departments were crowded with minor cases which should not be there. The Portsmouth committee is considering making a local inquiry into these and other questions, and plans to ask practitioners whether, when a patient has attended as an outpatient, a report on his condition reaches them quickly, and whether they meet with difficulties and delays when arranging the patient's appointment for consultation. The report urges, in any case, that the best possible appointments systems should be maintained in all the hospitals and reviewed at intervals to make sure it is working satisfactorily. Some hospitals are already thinking along these lines, and, as we record on p. 511 this week, the London Hospital has lately invited general practitioners in its neighbourhood to criticise its work and to suggest ways in which the service could be improved for both doctor and patient.

These are the kinds of things in which we, in this country, ought to excel, and can excel if we give our minds to it; for we are a kindly people, and readily become the partisans of those in distress. Every sick person is in distress, or thinks he is (and what but thinking makes it so?), and every relative with a grain of family feeling is more or less anxious. We cannot repeat these simple axioms to ourselves too often, or impress them too deeply on those who work with us at healing.

1. *Brit. med. J.* 1953, ii, 683.

Annotations

"THE NATIONAL"

THE National Hospital occupies a unique place in the hearts of many doctors throughout the world. It owes its enviable reputation not less to innumerable contributions to knowledge than to the personalities of the great neurologists who have worked within its walls. Sir Gordon Holmes, who has been associated with it for fifty years, has done us all a favour by writing its history.[1]

The hospital owes its foundation to the enterprise of Miss Joanna Chandler, and to the help and influence of David Ware, lord mayor of London, himself a victim of a chronic nervous disease. Miss Chandler was stirred by her inability to find a charity willing to care for a journeyman carpenter afflicted with paralysis. With the object of founding such a home, she and her sister set themselves the impossible task of raising enough funds by making and selling artificial flowers and ornaments of seashells and beads, destined to repose on satinwood whatnots and on the mantelshelves of front parlours, a source of delight to Victorian eyes. Miss Chandler persisted in her design for three or four years before she recruited the support of Mr. Ware. He thought that a hospital was wanted, not just a home of rest such as Miss Chandler had envisaged; and in the autumn of 1859 a meeting of potential supporters was convened in the Mansion House. The hospital "for epilepsy and paralysis" was opened at 24, Queen Square in the following summer.

In 1860 there was an outcry in the medical press against the establishment of special hospitals, brought to a head because a certain unpopular surgeon had advocated a hospital for stone. The profession feared that these specialised institutions would secure easy reputations for the doctors clever enough, or fortunate enough, to be elected to the staff, and might moreover attract to their doors patients well able to afford consultation fees. THE LANCET,[2] however, welcomed the setting up of a hospital for epilepsy because it had been advocated by the late Dr. Marshall Hall, and also because Dr. C. E. Brown-Séquard had agreed to serve on the staff: indeed his willingness to accept this appointment was noted "with feelings of extreme satisfaction." But Brown-Séquard, a native of Mauritius, and the son of an American sea-captain and a Frenchwoman, was restless by nature and crossed the Atlantic as often as any modern Foreign Minister. Finally, in 1878, he accepted a chair in medicine at the Collège de France and so was lost to the rising neurological institute in Queen Square.

The influence of Marshall Hall in the founding of this hospital may also have been important. In his Croonian lectures on apoplexy and epilepsy in 1852 this distinguished neurologist explains that he had long meditated the institution of "an hospital for the poor afflicted with epilepsy" but had been deterred because it was clearly undesirable to allow these patients to congregate and risk the terrifying experience of seeing fellow sufferers in a fit. Because, however, he believed the distress of the seizures could be minimised by the use of tracheotomy, the foundation of such an institution had then become "specially imperative upon the humane and the charitable." Describing the advantages of such a hospital, he wrote:

> "Having then done all that kindness and art can suggest for the solace and cure of our patients the next point is to ascertain, in those whose cases prove fatal, what are the morbid appearances on post-mortem examination." (*Lancet*, 1852, i, 461.)

What are the causes of epilepsy, he asked, and what are the effects of the epileptic seizures on the brain?

Marshall Hall died in 1857. His wish to see such a hospital established may have been repeatedly expressed, because when reporting the Guildhall meeting and welcoming the proposal this journal referred to the fact that it was "more than two years" since he had advocated a hospital for epilepsy. It is perhaps significant that while both Miss Chandler and David Ware seemed to have had the needs of the paralytic primarily in mind, the hospital at Queen Square was from the earliest days "for epilepsy and paralysis."

Sir Gordon, in his clear and concise way, tells how Miss Chandler, who attended the board meetings though not admitted as a member, insisted on a day-room for patients, and how she founded not only a ladies' samaritan fund but also an important pension fund for patients in distressed circumstances. There were the usual difficulties in finding sufficient accommodation and funds to maintain the beds in use. In the mid-Victorian days residents were hard to come by, and nurses were often incompetent. The druggist, however, appears to have been a man of many parts: in 1868 his salary was advanced £20 when he agreed to bath the male patients, and six years later he was voted a further £30 for "galvanisation of patients and other duties in the wards." The only unhappy chapter in the life of this hospital closed in 1901 when a secretary misguided enough to usurp the functions of the governors was deposed by a commission appointed under the chairmanship of Sir Edward Fry. So much influence had this "secretary-director" exerted over his board that medical representation was prohibited, and the doctors forbidden to meet in the board-room. As a special favour they were permitted to meet in the pathological department. The deposed dictator, albeit an able and efficient secretary, had been there since

1. The National Hospital, Queen Square, 1860–1948. By Sir GORDON HOLMES, F.R.C.P., F.R.S. Edinburgh: E. & S. Livingstone. 1954. Pp. 98. 10*s*. 6*d*.
2. 1859, ii, 594; 1860, i, 328.

1866; he fell because he failed to create a happy atmosphere in his hospital.

This volume includes a short chapter on the history of neurology, including in particular the British contribution before 1860. In his brief sketches of the physicians of the National Hospital Sir Gordon Holmes is at his happiest. Their contributions to knowledge he skilfully sums up, and if he passes over shortcomings lightly his appraisals are nevertheless fair and balanced. Particularly excellent, and likely to be often quoted, is his appreciation of Hughlings Jackson.

EXCRETION TEST OF HEPATIC FUNCTION

THE most easily tested aspect of liver function is excretion; and bilirubin was first administered for the purpose of such a test in 1927. Bilirubin is, however, expensive and difficult to obtain, and a fresh solution is necessary for each test. Accordingly it has been generally replaced by the synthetic indicator dye, bromsulphthalein, introduced by Rosenthal and White [1] in 1925. The popularity of this test—notably in the U.S.A.—is due to the ready solubility of the dye, its stability in solution, and the rarity of toxic reactions or local thromboses after administration. Of the many modifications of the test, that most commonly used depends on estimation of the proportion of the dye remaining within the circulation 30 or 45 minutes after a standard dose (usually 5 mg. per kg. body-weight) has been injected intravenously. That the parenchymal liver cells, and not the Kupffer cells, are responsible for the excretion of the test substance has been proved both in rabbits and in man by Mendeloff,[2] who found that after the injection of the fluorescent dye, rose bengal, fluorescence is shown only by the liver cells themselves, and not by the intrahepatic representatives of the reticulo-endothelial system. Moreover, Mendeloff and Ingelfinger [2] observed in man that the uptake of bromsulphthalein by the liver is impaired after the injection of rose bengal, which suggests that the two substances compete for the same excretory mechanism.

Goodman [3] has introduced a modification of the usual bromsulphthalein excretion test that combines simplicity with sensitivity. Samples of blood are taken at approximately 5-minute intervals for 20 minutes after the dye has been injected, and the concentration in each sample is estimated colorimetrically. By means of a simple calculation the result can then be expressed as the volume of plasma cleared of the dye per minute per kg. body-weight. Goodman and Kingsley [4] have studied by this method the effect of alcoholism on the excretory function of the liver. In 28 control cases without known liver disease or history of alcoholism the mean clearance was 5·33 ml. per minute, and in no case was the clearance less than 4 ml.; whereas in 18 patients with hepatic cirrhosis the mean clearance was only 2·06 ml. per minute, and the clearance in no case exceeded 3·1 ml. The test therefore revealed a clear-cut difference between controls and cirrhotics. An intermediate group of 35 patients with a history of chronic alcoholism, but neither history nor clinical evidence of hepatic disease gave results of especial interest. Although all were well nourished and none gave a history of acute alcoholism, 13 had a clearance of less than 4 ml. per minute—i.e., less than the lowest figure found in the control group. It is perhaps a pity that no biopsy studies are reported for this intermediate group, but the impairment of function revealed by the test clearly supports the ætiological association of alcoholism with hepatic disease.

On p. 488 Mr. Burnett describes his use of the bromsulphthalein test to assess the severity of the local inflammation in acute cholecystitis. In 22 out of 23 cases the test showed abnormal retention of the dye, whereas in each of 23 patients with chronic disease of the gall-bladder the excretion was normal. In contrast with the alkaline-phosphatase or thymol-turbidity tests the degree of dye retention was closely correlated with the severity of the inflammatory reaction. Moreover, of these 23 acute cases, only 5 had jaundice, which was never more than mild or latent. The excretion of bromsulphthalein is therefore significantly impaired before that of endogenous bilirubin. This suggests that the impaired excretion of the dye probably results from parenchymal dysfunction rather than biliary obstruction. This idea is supported by experimental evidence: Linder et al.[5] found considerable dye retention in rats within a few days after these were first given a protein-deficient diet designed to produce hepatic necrosis.

HOMOSEXUALITY AND MORAL WELFARE

AN interim report [6] for the Church of England Moral Welfare Council has been produced by a group of Anglican clergy and doctors who have been studying the problems of male inversion. As the Bishop of St. Albans says in a foreword, the report, which is for private circulation only, has been issued now because homosexuality is much in the public mind, and it is hoped that those who have comments to offer will forward them to Canon H. C. Warner, care of the council.

Homosexuality is defined as a condition due to causes beyond the individual's control, and this condition is clearly distinguished, throughout the report, from homosexual conduct for which the individual is held morally responsible. The causes of homosexuality are regarded as basically psychological, the majority of inverts being physically normal though some cases may have a congenital origin. Predisposing causes are seen in unsatisfactory relationships with parents—absence or cruelty of the father, over-protection by the mother—or in broken homes: but the tendency in all adolescents to homosexuality is recognised. Precipitating factors are self discovery of his homosexual tendencies by the youth, or his seduction by another male.

The moral and religious aspects are frankly discussed. The dilemma of the homosexual who accepts the teaching of the Church is sympathetically considered, but no directly sexual outlet for his instincts is condoned. He is exhorted to seek cure for his condition, or to accept it and, with divine help and the support of the Church's community life, sublimate his sexual desires in socially acceptable channels—work, artistic activities, or social service. The moral and psychological difficulties are not minimised, but a positive solution within the framework of religious belief is credibly outlined.

In examining the attitude of the law to the male homosexual, the report gives the paramount consideration in its opening sentence: "It is a duty of the State to protect young people from seduction or assault, to protect society from nuisances and to preserve public decency.' Any change in the law must be considered from this aspect. Legal anomalies, however, are seen in the law's different attitude towards homosexuality in the two sexes. Under the Offences Against the Person Act, 1861, indecent assault in the male is subject to a maximum penalty of ten years' imprisonment, indecent behaviour to imprisonment or fine, whereas there is nothing in English law which recognises homosexual practices between women as criminal. Another anomaly is seen in the fact that in no other department of life does the State concern itself with private actions of consenting adults. There is also an anomalous difference in the penalties for male and female importuning: it is sug-

1. Rosenthal, R. S., White, E. C. *J. Amer. med. Ass.* 1925, **84**, 1112.
2. Mendeloff, A. I. *Proc. Soc. exp. Biol., N.Y.* 1949, **70**, 556.
3. Goodman, R. D. *J. Lab. clin. Med.* 1952, **40**, 531.
4. Goodman, R. D., Kingsley, G. R. *J. Amer. med. Ass.* 1953, **153**, 462.
5. Linder, G. C., Parker, R. G. F., Selzer, G. *Brit. J. exp. Path.* 1953, **34**, 656.
6. The Problem of Homosexuality. The Church of England Moral Welfare Council, Room 252, Church House, Westminster, S.W.1. Pp. 27. 2s. 6d.

gested that "evidence concerning the comparative incidence, character and effect upon the young of male importuning and female prostitution needs to be authoritatively gathered and examined, and correlated with historical, sociological and moral factors. . . ." Reasons for a change in the law are given. Cases of suicide of homosexuals from fear of public exposure have been reported. The present law affords opportunity for blackmail, and may actually endanger the moral welfare of youths and boys because the practising homosexual may seek them out for his sexual objects as being less likely to blackmail or denounce him. The sense of being unfairly treated by the law may also drive homosexuals into antisocial behaviour.

The conclusion of the report expresses the hope that the facts set out may be considered worthy of a full official inquiry. Statistics of homosexual offences known to the police in England and Wales and the results of prosecution are given in tables at the end of the booklet.

CONGENITAL PNEUMONIA

CONGENITAL pneumonia has fascinated investigators since Ballantyne [1] first drew attention to it in 1902. Interest has been focused mainly on the mode of infection, the causal organisms, and the clinical significance of the lesions. The views expressed by Browne [2] thirty years ago have prevailed ever since. He regarded bacterial infection of the fœtal lungs and fœtal anoxia as the principal causes and emphasised that the infection usually arises from early rupture of the membranes with rapid bacterial invasion of the amniotic sac. Potter [3] supports this concept, and remarks that bacteria may be found in the amniotic fluid within a few hours of the onset of labour, even when the membranes are still intact. She also points out that when bacteria enter the lungs in inspired fluid, as with the respiratory movements induced by anoxia, they are more widely and evenly distributed than when they are carried in by air, and the subsequent inflammatory reaction is characteristically diffuse.

Barter [4] has found that congenital pneumonia was present in 15% of 97 stillborn infants and 30% of 40 infants who survived for less than six hours. He also found that the introduction of heavily infected fluid into the amniotic sac of fœtal rabbits produced pulmonary lesions morphologically similar to those observed in human fœtuses. He concluded therefore that a bacterial agent, though not often demonstrable, is the usual cause of congenital pneumonia. Yet, although bacterial infection probably accounts for most cases of intra-uterine pneumonia, Barter's evidence has not proved this. Macgregor [5] and other workers believe that chemical irritants aspirated in the liquor—notably the pigment and salts of bile in meconium—cause a similar, though usually less pronounced, tissue-reaction and account for a sizable minority of cases. Barter also showed that experimental injection of highly virulent organisms into the amniotic sac usually caused fœtal septicæmia with interstitial inflammatory lesions in the lungs; and he concluded that such lesions in the lungs of human fœtuses are probably produced in the same way.

Congenital pneumonia can be combated in the liveborn by the immediate intramuscular administration of wide-spectrum antibiotics, such as streptomycin and oxytetracycline (terramycin). Unfortunately antemortem diagnosis is seldom possible, but congenital pneumonia should be suspected when labour has been complicated by early rupture of the membranes and when there has been a likelihood of fœtal anoxia.

1. Ballantyne, J. W. Manual of Antenatal Pathology and Hygiene. Edinburgh, 1902; p. 221.
2. Browne, F. J. *Brit. med. J.* 1922, i, 469.
3. Potter, E. L. Pathology of the Fetus and the Newborn. Chicago, 1952; p. 252.
4. Barter, R. *J. Path. Bact.* 1953, **66**, 407.
5. Macgregor, A. R. *Arch. Dis. Childh.* 1939, **14**, 323.

SANARELLI-SHWARTZMAN REACTION

THE Shwartzman phenomenon may seem merely an exotic bloom from the hothouse of academic experimental biology; but it has a clinical bearing. If a rabbit receives an injection of bacterial products into the skin or circulation and this is followed next day by an intravenous injection of the same or even different bacteria, a hæmorrhagic, necrotising local or general reaction takes place. The reaction is accompanied by a fall in circulating platelets and leucocytes, which form thrombi in the capillaries of the lungs and other organs. If leucopenia is induced with nitrogen mustard or by other means, the reaction does not develop. Microscopically the hæmorrhagic process resembles that found in the Arthus phenomenon, or local anaphylaxis; but otherwise the two have so little in common that the Shwartzman phenomenon cannot be regarded as an allergic reaction except in a very wide sense. The Arthus reaction, which is highly specific, is produced by the repeated injection of the same substance—usually a protein—into the same site; it is mediated by antibodies which are transferable, and the abnormal reactivity is fairly permanent. The Shwartzman reaction is non-specific and can be elicited by such substances as kaolin or agar. It has no antibody mechanism, and the reactive state is temporary. Whether it is produced by the summation of the toxic effects of the two injections, as has been suggested, seems doubtful in view of the disproportion of the reaction to the effects of the individual substances. Moreover, there is great variation in the susceptibility of different species to the experimental procedure, and the reaction does not occur in all members of a susceptible species. The only recognised part played by allergy is that an antigen-antibody reaction can provide the eliciting factor.

Rostenberg [1] has brought together some of the facts known about the Shwartzman reaction. This may play a part in the production of skin lesions in some of the infective purpuras and hæmorrhagic forms of the common fevers. Possibly infective emboli prepare the skin sites and the reaction is elicited by circulating toxins; or alternatively the toxins may be the preparatory element. This may also happen in tuberculides, the bullous and necrotic form of leprosy, and the so-called "butcher's pemphigus." Various gangrenous skin lesions have been described in association with chronic inflammations of internal organs, notably ulcerative colitis. The lesions of ulcerative colitis have been reproduced experimentally by the Shwartzman technique; and ulcerative colitis may in turn furnish the infective focus that leads to the production of lesions in the skin by the same mechanism. The disease is reported to have been treated with an antiserum against *Escherichia coli* "with very favourable results," [2] and a case of ulcerative colitis with gangrenous skin lesions apparently responded strikingly to a hyperimmune streptococcal serum.[3]

Rostenberg holds that there is insufficient evidence for Lewi's [4] contention that some drug reactions, notably those due to organic arsenicals, arise from a Shwartzman reaction. A fatal case of the reaction has been attributed to penicillin [5]; but Kerby and Muller [6] were unable to detect a Shwartzman-active principle in penicillin, dihydrostreptomycin, aureomycin, chloramphenicol, or oxytetracycline (terramycin). Nelson and Braslow [7] report the death of a child with measles who was treated with penicillin and chloramphenicol. This baby developed a napkin rash which became hæmorrhagic and gangrenous.

1. Rostenberg, A. jun. *Brit. J. Derm.* 1953, **65**, 389.
2. Winkelstein A., Shwartzman, G. *Amer. J. digest. Dis.* 1942, **9**, 133.
3. Schmidt, H. W. *Proc. Mayo Clin.* 1953, **11**, 244.
4. Lewi, S. *Ann. Med.* 1949, **50**, 293.
5. Boetta, M., Hatoff, A. *Ann. pediat.* 1943, **66**, 335.
6. Kerby, G. P., Muller, J. C. *J. invest. Derm.* 1950, **15**, 385.
7. Nelson, L. M., Braslow, E. *Arch. Derm. Syph., Chicago*, 1953, **68**, 328.

Proteus was cultured from the skin ulcers and blood, and platelet thrombi were found in the pulmonary capillaries. From the time intervals it seemed improbable that the antibiotics were responsible for the apparent Shwartzman reaction; and with the concurrence of Shwartzman the reaction was attributed to the proteus infection, acting as both the preparatory and the eliciting factors.

The lessons from this knowledge may not be easy to apply; for, as Rostenberg points out, it may be difficult to detect the bacteria responsible for the two stages in the process, or to prepare effective antisera against them. Moreover there is some risk that such antisera might produce an antigen-antibody reaction that would detonate the Shwartzman bomb. Indeed, one feels increasingly disinclined to inject things into veins: agar and dextran are not wholly dissimilar.

CANDICIDIN

SERIOUS mycotic infections are fortunately rare in this country. Torulosis is reported from time to time; but blastomycosis, histoplasmosis, and coccidioidomycosis—which are not uncommon in parts of the U.S.A.—are regarded here as interesting curiosities. Apart from the dermatophytoses, infections by *Candida albicans* constitute the most important group of mycoses. This organism causes oral and vaginal thrush and cutaneous infections, and it may sometimes cause serious systemic affections as a sequel to antibacterial therapy.[1–4]

In the treatment of moniliasis promising results have been obtained with candicidin, which is one of the most active of many antifungal agents produced by species of streptomyces. Its properties have been investigated by Lechevalier.[5]

Candicidin is formed by various species of streptomyces in a medium containing peptone and glucose, from which it is extracted by filtration through diatomaceous earth at pH 2·5 and purification by various solvents. *C. albicans* is inhibited by a concentration of 0·02 µg. per ml. of the most active preparation so far obtained. Candicidin is unstable in solution, with a half-life of twenty-four hours at neutral pH and 25°C. It is particularly unstable in acid, and its antifungal activity is greatest in neutral or slightly alkaline solution. As the name suggests, it is actively fungicidal in vitro. In one experiment Lechevalier found that the viable count of cells of *C. albicans* was reduced from 13×10^6 to 16×10^2 per ml. in twenty-four hours. Resistance to candicidin develops slowly in vitro. The sensitivity of one strain of *C. albicans* fell from 0·25 µg. to 1·5 µg. per ml. after eighteen subcultures in the presence of the drug.

Toxicity for mice is low, though it varies to some extent with the purity of the preparation. The lethal intraperitoneal dose for most preparations tested by Lechavalier was 45–70 mg. per kg. body-weight, while with subcutaneous administration toxicity was lower. In man no irritation of the buccal mucous membrane was observed when swabs soaked in 1% candicidin were applied every three hours for two days. In mice experimentally infected with *C. albicans* or *Blastomyces dermatitidis*, the mortality of animals treated with candicidin was very much less than that of untreated animals. In mice infected with *Histoplasma capsulatum* candicidin reduced mortality somewhat, but it had no effect on mortality from infection with *C. neoformans*.

It is too soon to say whether candicidin has a place in the treatment of disease in man. The absence of irritation of the buccal mucosa, however, suggests it may be useful against oral thrush. Of considerable interest also is the observation that candicidin prevented overgrowth of yeasts in the fæces of mice receiving chloramphenicol.

1. See *Lancet*, 1953, ii, 174.
2. Taylor, H., Rundle, J. A. *Ibid*, 1952, i, 1236.
3. Brown, C., Propp, S., Guest, C. M., Beebe, R. T., Early, L. *J. Amer. med. Ass.* 1953, **152**, 206.
4. Browne, S. G. *Lancet*, Feb. 20, 1954, p. 393.
5. Lechevalier, H. *Pr. méd.* 1953, **61**, 1327.

PHAGOCYTOSIS OF STREPTOCOCCI

ORGANISMS ingested by phagocytic cells may be killed and digested by the cell; or they may survive long within the cell with little or no multiplication; or they may proliferate rapidly, killing the phagocyte and escaping from it. A further possible outcome has been described by Wilson,[1] who observed that organisms ingested by a leucocyte may subsequently be egested, much as food residues are egested by amœbæ and other protozoa. Wilson made these observations in vitro by phase-contrast microscopy; the organisms were group-A streptococci, and the leucocytes were from both man and mice. Convincing photographs accompany the report.

In one series of observations, 30 minutes after a streptococcal suspension was mixed with fresh human blood, a monocyte was seen to have ingested a chain of four cocci, forming a vacuole around it. At 45 minutes the monocyte approached a chain of eight cocci, which by 60 minutes had been phagocytosed and lodged in the same vacuole as the first four. Both chains were egested 5 minutes later and were re-phagocytosed after another 5 minutes. After 110 minutes the chains were still within the cell, but not in a vacuole. In another experiment, a chain of three cocci, which for 11 minutes had been enclosed in a vacuole within a leucocyte, was egested, and 10 minutes later it started to divide. In another series of observations, however, a coccus which had remained intracellular for 50 minutes was apparently unable to reproduce, since it remained single after 40 minutes' freedom from the leucocyte.

The immediate significance of these observations is not clear. As Wilson points out, the egestion of bacteria by phagocytes in vitro does not necessarily indicate that a similar process takes place in vivo. If it does take place, it may have a bearing on the dissemination of infection in the body; but it is doubtful whether knowledge of this mechanism will help to prevent such dissemination.

BORIC ACID POISONING

FOUR years ago we cited [2] Watson's emphatic declaration that boric acid should no longer be used, on the ground that it is both inert and dangerous.[3] Since then further instances of poisoning from this cause have been brought to light [4]; and on p. 515 of this issue Dr. Living-Taylor describes a case of "curiosity-poisoning." Unhappily boric acid is still used extensively in the care of young babies, the most susceptible age-group. The main hazard is from local application.[5 6] Apparently boric acid is not absorbed to any extent from the intact skin; but it may be rapidly absorbed from a damaged skin surface. Ducey and Williams [6] have shown that application to injured skin of a 5% dusting-powder can lead to severe poisoning; a potentially lethal amount may be absorbed within five days from an area of 100 sq. cm. Fisher [7] suggests that not all cases of such poisoning are recognised, for in a study of deaths from uncertain causes in infants he found that commonly there was a history of napkin rash with dermatitis treated by application of boric acid. Ducey and Williams [6] emphasised that misdiagnosis is frequent; in 2 cases of their series the patient was admitted to hospital with a diagnosis of gastro-enteritis. Goldbloom and Goldbloom [4] have made a strong case for the identification of Ritter's disease—exfoliative dermatitis in infants—with boric acid poisoning.

1. Wilson, A. T. *J. exp. Med.* 1953, **98**, 305.
2. See *Lancet*, 1950, i, 216.
3. Watson, E. H. *J. Amer. med. Ass.* 1945, **129**, 332.
4. Goldbloom, R. B., Goldbloom, A. *J. Pediat.* 1953, **43**, 631.
5. McGillivray, P. C., Fraser, M. S. *Arch. Dis. Childh.* 1953, **28**, 484.
6. Ducey, J., Williams, D. B. *J. Pediat.* 1953, **43**, 644.
7. Fisher, R. S. *Amer. J. Path.* 1951, **27**, 745.

It seems that while boric acid continues to be generally used, poisoning by this substance should be considered in the diagnosis of all cases of gastro-enteritis with an erythematous or exfoliative rash in young babies. According to McGillivray and Fraser,[5] the skin change (which is nearly always present, though it may not be prominent) may consist in a widespread erythematous, sometimes scarlatiniform, rash, congestion of the digits, or aggravation of the napkin rash. There are two simple laboratory tests for the presence in the body of boric acid or borax. In the first of these the urine is added drop by drop to an 0·05% solution of carmine in concentrated sulphuric acid on a white tile; a colour change from red to blue indicates the presence of boron. In the second test a strip of turmeric paper is soaked in the specimen (urine or cerebrospinal fluid) acidified with dilute hydrochloric acid. A positive result is indicated by a red colour which changes to dark green on addition of dilute caustic soda or ammonia. McGillivray and Fraser recommend that both tests be done.

The time has surely come to abandon the use of boric acid; and a useful first step would be to exclude it from the *British Pharmacopœia*. More effective antiseptics are available; and there is no good reason for including it in dusting-powders.

PLACENTAL BLOOD

AT the moment of birth 20–25% of the total fœtal blood is in the vessels of the placenta and cord.[8] It has long been known that a large proportion of the placental blood will drain into the infant if the cord is not clamped until the placenta is delivered, and that this flow can be facilitated by placing or holding the infant below the level of the placenta.[9–11] When the infant is above the level of the placenta blood will still pass to it so long as there is strong pulsation in the cord, but if the cord pulsations are weak or absent blood will drain out of the body of the infant and into the placenta.[12 13]

DeMarsh et al.[8] find that the blood volume of infants who received all possible placental blood was increased by 20%. There was, however, a great overlap in the results between test cases and controls (where the cord had been clamped immediately on delivery), and Barcroft[14] believed that a 10% increase is more likely. To the average "full-time" infant this is equivalent to a transfusion of 30–60 ml. of blood (hæmoglobin level 16–18 g. per 100 ml.). The extra plasma leaves the blood very quickly, with resultant concentration of formed elements, and the infant is benefited to the extent of 17–34 mg. of iron.

McCausland et al.[15] and Duckman et al.[13] consider that immediate postnatal development is better in infants allowed to receive as much placental blood as possible, and they too suggest that the infant should be held below the level of the placenta to aid transfer, which is accomplished mainly by the squeezing action of uterine contractions on the placenta. These workers describe a technique of "stripping" for use where the circumstances of the labour do not allow five to fifteen minutes for transfer of the placental blood.

Any deficit in iron might be made good by giving iron to the newborn infant, but McCausland et al. and Reynolds[12] suggest that the increased volume supplied by the placental blood may be of immediate benefit in helping to fill the capillary bed of the expanding lungs. With the onset of respiration the pulmonary arterial pressure falls suddenly and the speed of the blood-flow through the lung increases greatly.[16] Along with the fall in pulmonary arterial pressure there is a sudden fall in systemic blood-pressure, which Reynolds believes is due to withdrawal of blood from the systemic circulation to fill the expanding capillary bed in the lungs. He holds that if the placental blood is allowed to flow into the infant, the lung capillary bed may be filled without detriment to the systemic circulation and that the onset of respiration will be facilitated. Conversely where placental blood is denied to the fœtus or where the blood is allowed to drain from the fœtus—for example, by placing the baby on the mother's abdomen after delivery until cord pulsation ceases—pulmonary expansion is hampered and a fall in systemic blood-pressure is precipitated at a time critical for the infant. Ardran et al.[16] suggest that the fall in systemic pressure coincidently with the onset of respiration is due to communication of the fall in pulmonary arterial resistance, through the patent ductus arteriosus, to the systemic circulation. The systemic pressure does not fall if the ductus is closed before respiration begins, and any fall in systemic pressure is reversed when the ductus closes. In lambs studied by Ardran et al.[16] the systemic blood-pressure fell sharply when respiration began, even though the placental circulation was intact and placental blood could presumably still flow to the fœtus. Moreover, the fall in systemic pressure was immediately reversed when the umbilical cord was clamped. Barcroft[14] concluded that blood from the placenta would not be transferred to the lung capillary bed. His own and other experimental evidence suggests that the vessels of the expanded lung do not contain a greater volume of blood than those of the lung before the onset of respiration[14 17 18]; there is no experimental proof that extra blood is needed to fill the pulmonary capillary bed.

It certainly seems irrational to allow blood to drain from the infant by placing it above the level of the placenta before cord pulsations have ceased. If the infant is allowed to remain at or below the level of the placenta for two to three minutes (while the face is cleaned and the air-passages cleared) some 20–30 ml. of blood will drain from the placenta by the effect of uterine contractions.[15] The infant is likely to be held above this level only during cæsarean section (though even then some placental blood is transferred to it if cord pulsations are strong.[19]) Babies born by cæsarean section are sometimes premature or anoxic, and extra blood should theoretically be an advantage because of the additional iron and protein. The obstetrician must balance the value of extra blood, obtained by placing the infant at or below placental level till the placenta is expelled, against the risk of chilling the infant and delaying resuscitation.

In the first two hours of life the blood becomes more concentrated, and the hæmoglobin level and red-cell count may rise very high. In an infant to which only part of the placental blood was transferred at birth, a hæmoglobin level of 24·8 g. per 100 ml. and a red-cell count of 6,440,000 per c.mm. was found on the second day[19]; in the cord blood at birth figures were 18·6 g. and 4,780,000. If 100 ml. of placental blood with a hæmoglobin level of 21 g. and a red-cell count of 5,500,000 were transferred to an infant at birth, its blood in the first and second days would be very concentrated indeed. Blood of such concentration may have a detrimental effect on the circulation of the small premature, shocked, or anoxic baby. This aspect does not seem to have been investigated so far.

8. DeMarsh, Q. B., Windle, W. F., Alt, H. L. *Amer. J. Dis. Child.* 1942, **63**, 1123.
9. Schüking, A. *Berl. klin. Wschr.* 1879, **16**, 581.
10. Haselhorst, G., Alimeling, A. *Z. Geburtsh. Gynäk.* 1930, **98**, 103.
11. Gunther, M. Unpublished data.
12. Reynolds, S. R. M. *Sci. Mon., N.Y.* 1953, **77**, 205.
13. Duckman, S., Merik, H., Lehmann, W. X., Regan, E. *Amer. J. Obstet. Gynec.* 1953 **66**, 1214.
14. Barcroft, J. Researches in Prenatal Life. Oxford, 1946.
15. McCausland, A. M., Holmes, F., Schumann, W. R. *Calif. Med.* 1949, **71**, 190.
16. Ardran, G. M., Dawes, G. S., Prichard, M. N. L., Reynolds, S. R. M., Wyatt, D. G. *J. Physiol.* 1952, **118**, 12.
17. Abel, S., Windle, W. F. *Anat. Rec.* 1939, **75**, 451.
18. Blaschko. Cited by J. Barcroft (footnote 14).
19. Walker, J., Turnbull, E. P. N. Unpublished data.

Special Articles

MEDICAL CERTIFICATES UNDER THE LUNACY AND MENTAL TREATMENT ACTS

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THE compulsory removal of a patient to a mental hospital is an interference with the liberty of the subject. One of the duties of the Board of Control is to examine all reception documents, and scrutinise the medical certificates incorporated in them, so as to ensure that the patient's rights are preserved. Although, at some time or another, most doctors doing such work have had their certificates returned for amplification or for amendment, it is not perhaps generally realised that the Board of Control has power to order the discharge of patients if the certificates are not amended to its satisfaction.

BASIC PRINCIPLES

Since a patient, forcibly removed from the community under a reception order, has a right of action against the person or persons procuring an unlawful removal, it is very important that the legal requirements of the Lunacy Act, 1890, for the completion of medical certificates should be exactly fulfilled. In the main, these requirements are :

1. Every medical certificate under the Act must be made and signed by a doctor. The statutory form printed in the second schedule to the Act restricts the power to issue certificates to practitioners, being registered under the Medical Act, 1858, who are in actual practice.
2. Every medical certificate must be factual—i.e., it must state the facts which have led the doctor to form his opinion that the patient is of unsound mind. It is incumbent on the doctor to state both the facts which he himself has observed and the facts which have been told to him by others : reception orders based only on facts communicated by third parties have no validity.
3. Every medical certificate is evidence both of the facts stated therein and of the judgment formed by the doctor in considering those facts. It has the same legal value and effect as if the matters appearing therein had been verified on oath.
4. The doctor must personally examine the patient before writing a medical certificate.
5. A doctor may not sign a medical certificate if :

(*a*) he is the manager of the institution into which the patient is to be received or if he is the person who is to have charge of the single patient ;
(*b*) he is a person who is interested in the payments on account of the patient ;
(*c*) he is a regular medical attendant of the institution in which the patient is to be detained ;
(*d*) he is the partner or assistant of any of the foregoing persons or is related to them in any of the following ways :

Blood relatives	*Relatives by marriage*
Husband	Father-in-law
Wife	Mother-in-law
Father	Son-in-law
Mother	Daughter-in-law
Son	Brother-in-law
Daughter	Sister-in-law
Brother	
Sister	

A person who signs a medical certificate is not liable to any civil or criminal proceedings if he acts in good faith and with reasonable care, but section 317 of the Lunacy Act, 1890, makes clear that he is nevertheless guilty of a misdemeanour if he makes a wilful misstatement of any material fact.

SOME OTHER PRINCIPLES

Besides these basic rules for the issue of medical certificates there are a number of others which can most conveniently be grouped according to the legal processes involved.

Voluntary Patients

Any person who voluntarily desires to submit himself for mental-hospital treatment can make a written application to the hospital authorities. Only for a child under 16 years of age is it necessary for the application to be accompanied by a medical recommendation. Although the Mental Treatment Act, 1930, does not prescribe a statutory form, the doctor's recommendation must bear his signature and state his qualifications. Further points about children's certificates are :

1. A child cannot be accepted as a voluntary patient except on the written application of the parent or guardian.
2. The medical recommendation can be given only by the child's usual medical attendant or by a doctor approved for the purpose either by the Minister of Health or by the local authority.
3. The medical recommendation must state the date or dates on which the doctor examined the child ; it has no legal effect on the expiration of 14 days from the last date on which the child was examined.
4. The medical recommendation must contain a statement that the child is likely to be benefited by being received as a voluntary patient for treatment for mental illness.

Temporary Patients

On the written application of a near relative or duly authorised officer, a person can be admitted to a mental hospital as a temporary patient, provided that (*a*) he is suffering from mental illness, (*b*) he is likely to benefit by temporary treatment, and (*c*) he is, for the time being, incapable of expressing himself as willing or unwilling to receive treatment. The form of application is prescribed and embodies a medical recommendation which must be signed by two doctors, one of whom must be approved by the Minister of Health for the purpose. The other doctor should be, whenever practicable, the patient's usual medical attendant.

Before signing the recommendation, the two doctors must examine the patient either separately or together ; if the examinations are separate, the longest permitted interval between them is 5 days. The recommendation ceases to have effect 14 days from the date of the examination, or, if the doctors' examinations are carried out on different dates, 14 days from the date of the later of the two examinations.

Unless the two doctors agree that the patient is mentally ill, is likely to benefit by temporary treatment, and is temporarily incapable of expressing himself as willing or unwilling to receive treatment, a temporary order cannot be made ; both doctors must state the grounds on which their joint conclusion is framed, carefully distinguishing between statements of facts based on their own personal observations and statements of facts which are based on communications made to them by others.

The requirement as to the temporary loss of volitional powers precludes many patients from being admitted to hospital for temporary treatment ; but for acute confusional or puerperal patients the provisions are very useful. The Board of Control has made the following observations on volition :

(i) If a patient indicates unwillingness to receive treatment, no matter how irrational his refusal may be, he is not eligible for treatment as a temporary patient.
(ii) If, however, a patient is so confused or incoherent that at one moment he refuses to receive treatment and at the next expresses willingness, this may indicate such a complete lack of continuity of purpose that the patient may be considered non-volitional.
(iii) The phrase " for the time being is incapable of expressing willingness or unwillingness to receive treatment " means at the time when the doctors make their recommendation. If by the time the patient reaches a mental hospital he appears to have recovered volition, he may none the less be admitted, the situation being governed by section 5 (12) of the Mental Treatment Act.

Although a temporary patient cannot be detained in a mental hospital for a longer initial period than 6 months,

this period—if there is a reasonable expectation of early recovery—can be extended by the Board of Control for further periods not exceeding 3 months up to a limit of 6 months in all.

Reception Orders on Petition

Before July 5, 1948, these orders could only be used for private patients; an amendment of the Lunacy Act, 1890, now extends the provisions to all classes of the community and thus enables relatives to take action privately and without recourse to the official machinery.

Before a relative can present a petition, to a judicial authority, he must obtain separate medical certificates in the prescribed form from two doctors, one of whom must, normally, be the patient's usual medical attendant. If this is not practicable, the petitioner must give written reasons to the judicial authority. The medical examinations, on which the certificates are based, must be carried out separately and not more than 7 clear days before the date on which the petition is presented. If the judicial authority is not satisfied with the evidence of mental illness appearing by the medical certificate, he may think it necessary himself to visit the patient; unless he does so, a patient admitted to a mental hospital under an order on petition has a statutory right to be taken before, or visited by, another judicial authority after admission.

A doctor is debarred from signing a certificate where he himself, his partner, or his assistant is the petitioner; the disqualification also applies if he is related to the petitioner in any of the ways already mentioned in basic rule 5. A doctor signing a medical certificate in support of a petition must be neither partner nor assistant nor similarly related to the doctor who signs the other medical certificate.

As the procedure is strictly private, the law places a limitation on the persons who may be present when the judicial authority considers the petition. The two doctors who sign the medical certificates are among those who have a statutory right to be present, but they are bound to keep secret all matters and documents which may come to their knowledge at the judicial hearing.

Urgency Orders

Where it is expedient either for the patient's welfare or for the public safety that a mentally ill person should be forthwith placed under care and treatment, a duly authorised officer can make an urgency order; if the patient is to be admitted to hospital as a private patient, the order is signed, if possible, by the patient's husband or wife or other near relative. If signed by someone else, a statement of reasons as to why the order is not signed by a near relative must be given.

The order embodies both a statutory form of medical certificate and a statement by the doctor "that it is expedient for the welfare of the patient or for the public safety that the patient should be placed forthwith under care and treatment"; the doctor must give his reasons for making this statement. The medical examination must be carried out not more than 2 clear days before the patient's reception into hospital. An urgency order remains in force for 7 days from the date it is made. It may be made before or after the presentation of a petition.

A doctor is debarred from signing the medical certificate where he himself, his partner, or his assistant is the person signing the urgency order; the disqualification also applies if he is related to the person signing the urgency order in any of the ways already mentioned.

Summary Reception Orders

The procedure for summary reception orders is commonly known as "certification" and it is the method most often used for compulsory removals. It can only be used, however, where a patient is wandering abroad or where a patient is not under proper care and control and there are no relatives or friends willing and able to proceed by way of petition.

Within 3 days of having established that there are reasonable grounds for invoking the statutory procedure, the duly authorised officer gives notice to a justice, who within 3 days of the duly authorised officer's notification, calls in a doctor. In actual practice, of course, the justice, duly authorised officer, and doctor usually meet by appointment at the patient's house; but the strict procedure must be mentioned to show that medical examination must follow, and not precede, the notice to the justice.

The justice has to see the patient for himself; and if he is satisfied, on the evidence of his own examination and the evidence contained in the doctor's medical certificate, that the patient is of unsound mind and a proper person to be detained, he may make a summary reception order. The final decision rests with the justice, and although obviously his judgment will be influenced by the doctor's certificate and views, the power to order the patient's removal is vested in the justice alone.

The medical certificate, embodied within the summary reception order, is of statutory form; the medical examination must be carried out not more than 7 clear days before the making of the order.

Three-day Orders

The use to which section 20 of the Lunacy Act, 1890, is put varies in different parts of the country and largely depends on the location of those hospitals which have been designated by the Minister of Health for the purpose of the section. It gives to the duly authorised officer (or to any constable) the power to remove a person suspected to be of unsound mind, but detention is limited to 3 days. These orders can be made only in cases where the duly authorised officer (or constable) has a duty to perform and where it is necessary for the public safety or the patient's welfare that the patient should be placed under care and control.

The officer taking action has absolute discretion, but he may "inform" his mind in any way. Although the statutory form of 3-day order contains no medical certificate, it is of course desirable for the officer's action to be supported, whenever possible, by medical opinion.

Fourteen-day Order

If a justice is satisfied that, for the patient's welfare or the public safety, a patient should be forthwith placed under care and control, he may order detention for 14 days; but he cannot do so unless he is satisfied that there is proper accommodation in the mental hospital. His power to make such an order is limited to patients for whom he could have made a summary reception order.

No medical certificate is contained within the statutory form of order.

Magistrates' Courts Act, 1952

Section 30 of this Act gives new powers to magistrates' courts. Where a person is charged with any act or omission as an offence punishable on summary conviction with imprisonment, the court, instead of dealing with the offender in any other way, may make an order directing him to be received and detained in a mental hospital. Before making such an order, however, it must be satisfied:

(1) That the person did the act or made the omission charged.
(2) That, on the evidence of at least two doctors, the person is of unsound mind.
(3) That the person charged is a proper person to be detained.

Occasions may arise, therefore, when doctors may be asked to give evidence to a court as to whether a person is of unsound mind—evidence which can be given only after personal examination. It is important to note that, if a person has been charged with an offence, the procedures under the Lunacy Act, 1890, and the Mental Treatment Act, 1930, cannot be invoked until the person has been discharged from the court. It is also possible

for a magistrates' court to remand an offender for not more than 3 weeks for a medical examination of his physical or mental condition; if remanded on bail, it is a condition of the offender's recognisance that he shall undergo examination by a doctor at a specified institution or place or by a specified doctor.

PROBATION ORDERS

The provisions in the Criminal Justice Act, 1948, permit the courts to include a requirement in a probation order that an offender shall submit to medical treatment for improvement of mental condition. The main points are:

(1) Evidence to the court must be given by a doctor who appears to the court to be experienced in the diagnosis of mental disorders. For this purpose, a written report may be accepted as evidence without proof of the signature, qualifications, or experience of the doctor.
(2) The evidence required is that the mental condition of the offender requires and may be susceptible to treatment but is not such as justifies certification under the Lunacy and Mental Deficiency Acts.
(3) The requirement in the probation order as to medical treatment for improvement of mental condition shall not be for longer than 12 months.
(4) Medical treatment for improvement of mental condition shall be one of the following kinds:
  (*a*) Treatment as a voluntary patient.
  (*b*) Treatment as a resident patient in such specified institution or place as may be approved by the Minister of Health.
  (*c*) Treatment as a non-resident patient at a specified institution or place.
  (*d*) Treatment by or under the direction of a specified duly qualified medical practitioner.

A probationer, like other voluntary patients, has a statutory right to leave the mental hospital by giving 72 hours' notice; but if he does so he will have broken the conditions of his probation and thus becomes liable to be dealt with under section 6 of the Criminal Justice Act, 1948. The hospital should inform the probation officer or police that the patient intends to leave, or has left, the hospital.

OTHER CERTIFICATES

Although no attempt is made here to expound all the possible requirements for medical certificates under the Lunacy, &c., Acts, a few others must be mentioned.

Suspension of removal.—Where a summary reception order has been made, the patient's physical removal to the mental hospital may be suspended if the examining doctor certifies in writing that the patient is not in a fit state to be moved.

Mechanical restraint.—Mechanical means of bodily restraint must not be applied to any patient except (*a*) for surgical or medical treatment, or (*b*) to prevent him from causing injury either to himself or others. If such restraint is applied, a medical certificate must be signed describing the type of mechanical restraint used and the grounds on which the certificate is founded.

If, to make his removal easier, an unwilling or violent patient is given a drug, the reception order should be endorsed by the doctor, stating the amount and nature of the drug given, and the date and time of administration.

Patients discharged on trial.—Unless a medical certificate, certifying that detention as a person of unsound mind is no longer necessary, is sent to the mental-hospital authorities at the expiration of a period of trial, the patient may be retaken by the hospital authorities within 14 days from the expiration of the date of trial.

FEES FOR MEDICAL CERTIFICATES

In accordance with an agreement between the British Medical Association and the local authority associations, payments for certificates given under the Lunacy and Mental Treatment Acts are now made as follows:

Medical certificate under sec. 16 of the Lunacy Act, 1890 (certification), £2 2*s*.
Recommendation under sec. 5 (3) of Mental Treatment Act 1930 (temporary patient), £2 2*s*.
Recommendation under sec. 1 (3) of Mental Treatment Act, 1930 (juvenile voluntary patient), £1 5*s*.

Except in certain circumstances, no fee is paid for certificates given by medical officers of mental hospitals. The fees for certificates in petition orders are payable by the petitioner and not by the local health authority.

LEGAL PROTECTION

Doctors and others carrying out the provisions of the Lunacy and Mental Treatment Acts are protected by section 330 of the Lunacy Act, 1890. As amended by the Mental Treatment Act, 1930, the provisions read:

Where a person has . . . signed . . . or done any act with a view to signing . . . a recommendation or certificate . . . he shall not be liable to any civil or criminal proceedings whether on the ground of want of jurisdiction or on any other ground unless he has acted in bad faith or without reasonable care.

No proceedings, civil or criminal, shall be brought against any person in any court in respect of any such matter as is mentioned in the last preceding subsection without the leave of the High Court, and leave shall not be given unless the court is satisfied that there is substantial ground for the contention that the person, against whom it is sought to bring the proceedings, has acted in bad faith or without reasonable care.

Notice of any application under the last preceding subsection shall be given to the person against whom it is sought to bring the proceedings, and that person shall be entitled to be heard against the application.

Where, on any application under this section, leave is given to bring any proceedings, and the proceedings are commenced within four weeks after the date on which leave was so given, the proceedings shall, for the purposes of the Public Authorities Protection Act, 1893, be deemed to have been commenced on the date on which notice of the application was given to the person against whom the proceedings are to be brought.

Under section 331 of the Act, an ex-patient who wishes to begin legal proceedings must do so within twelve months of the date of his release from the mental hospital.

HOSPITAL AND PRACTITIONERS

A RECEPTION AT THE LONDON

ON Feb. 24 the governors and consultants of the London Hospital gave a reception to which over 600 general practitioners who regularly refer their patients to the London were invited. The aim was to give the G.P.s an opportunity to meet the consultants and others on the hospital staff; and the G.P.s welcomed the offer and turned up in strength. The reception was held in the newly reconstructed outpatient department. Each year the London's outpatients make 700,000 attendances, and the department is the largest in the country. Since the late war much has been done to extend and speed up the work of the department; and the guests at the reception were able to see and hear something of this progress.

When the G.P.s received their invitations to this occasion, they also had a letter asking them to answer a number of questions about the service which the hospital provided and to give their criticisms. This sort of letter seems to us such a valuable means of testing the efficiency of a hospital's service to G.P.s that we reproduce this excellent example in full:

"Since the war this hospital has endeavoured, by reorganisation and modernization, to improve its service both to the patient and the general practitioner. The Medical Records Department has been completely reorganised and an appointment system for out-patients has been set up. An endeavour is now being made to keep in touch with patients on the waiting list and to give them adequate notice of their admission.

The general practitioner is written to by the doctor after the patient's first attendance at Out-patients and again, if necessary, after subsequent attendances. In the case of an in-patient, a summary of the patient's notes is sent to the general practitioner after discharge. At the present time there is often considerable delay in the sending out of these summaries and it is now proposed to send a standard letter to the general practitioner, as a routine, on the day the patient is discharged, giving (*a*) date of discharge; (*b*) diagnosis; (*c*) treatment; (*d*) advice on discharge—medicine, &c.; (*e*) information given to patient—whether further attendance as out-patient required. In addition, should a patient die in the hospital, the general practitioner is informed by telephone.

The hospital would be very glad to have the views of general practitioners on this service, with any suggestions they may have for its improvement, in particular:

(1) Are you satisfied with the above information?

(2) Before the war, when a patient was admitted to hospital, a postcard was sent to the general practitioner informing him of this. Would this be a help?

(3) When you ring up the hospital, either concerning (*a*) the admission of a patient or (*b*) an appointment for an outpatient, do you get prompt and satisfactory service?

(4) Do you find that the patients you send up for a consultation are retained as out-patients over a long period, when they might be referred back to you? It would be helpful if the doctor, in his letter to the hospital, would indicate whether the patient is sent up for treatment or an opinion only.

(5) When a long course of medicine is suggested is there any difficulty if the patient is referred back to you in order to obtain supplies?

(6) Would it be helpful if you received, periodically, a timetable of clinics and consultants' attendances?

(7) Have you any suggestions that would improve the service: (*a*) to the patient; (*b*) to the general practitioner?"

During the reception Sir John Mann, chairman of the board of governors, said that nearly 400 replies had been received. Many criticisms and suggestions had been made: in general, the doctors were satisfied with the information which they received from the hospital, but it would be a help if the summary of an inpatient's case could be sent more quickly. The main criticisms included the delay in making appointments by telephone, the long wait for many outpatients, and the difficulty in arranging the admission of urgent cases. An analysis of the replies, with the hospital's comments, is to be sent to the doctors who answered the questionary.

HOSPITAL REFORM IN NEW ZEALAND

FROM OUR NEW ZEALAND CORRESPONDENT

IN June, 1953, the New Zealand government appointed a Consultative Committee on Hospital Reform, under the chairmanship of Mr. H. E. Barrowclough. Its report has just been released by Mr. J. R. Marshall, the minister of health. Action is required within the next two years, by the end of which the abolition of rates levied on local bodies as a source of hospital revenue will be complete, and the funds will come solely from the government. The present system of hospital boards is based on essentially local responsibility for finance: the committee bases its plan on central responsibility.

Among the measures advised are curtailment of the number of hospital boards from 37 to 23, and the inclusion in the larger boards of some appointed members, the remainder still being elected by popular vote. In Dunedin and Auckland there is to be university representation. There are to be 5 regional authorities, based on the 4 main centres and Palmerston North. Coördination between the regions, and certain central functions of standardisation and research, are left with the hospital division of the health department. Urgently needed are studies on, and the introduction of, a system of costing for the various sections of hospital work. Greater aid for private hospitals is advised, on the ground that this would be a less expensive way of maintaining beds than new building in public hospitals.

The regional conception is welcome, but in the report there is insufficient definition of the scope and powers of, and the relationships between, health department, regional authority, and local hospital board. Doubtless much would depend on the calibre of men secured for the full-time executive posts and the part-time membership of the regional authorities. The idea of a corporation or commission to take the place of the department as a coördinating body between the 4, 5, or 6 regions has been widely discussed, but the committee makes no suggestion to this effect.

In general the report is a useful stimulus to thought in hospital affairs, but perhaps the government will not act on it during 1954, which is election year.

GREAT ORMOND STREET AND UGANDA

ARRANGEMENTS have now been concluded for an association between The Hospital for Sick Children, Great Ormond Street, and the medical faculty of Makerere College, Kampala, Uganda.

1. Each year a member of the visiting staff of Great Ormond Street will spend a period of some weeks in Uganda.

2. A senior medical registrar will spend approximately two years in Kampala, working in pædiatrics on the staff of the professor of medicine at Mulago Hospital and holding the rank of a special-grade medical officer in the Uganda Medical Service. The first occupant of this post will start work in the autumn.

3. One or (it is hoped) eventually two nursing sisters will be seconded to staff the children's ward at Mulago Hospital. One has already left for Uganda.

The salaries of the registrar and of the nursing sisters will be paid by the Uganda government, but all other expenses, including travelling expenses for the journeys out and back, and the provision of transport for the use of the seconded staff, will be met by the board of governors of The Hospital for Sick Children from its own funds.

It is hoped that this may serve as a pioneer scheme for similar associations between medical schools overseas and teaching hospitals in the United Kingdom.

Public Health

Making Services Known

THE health committee of the Hammersmith Borough Council are trying a new plan: they have opened a bureau in the town hall, to reply to inquiries—whether from doctors or other members of the public—about the many health services provided by the nation, the borough and county councils, and voluntary bodies; and they have published a useful booklet, which will be brought up to date every year, on all such services available in their area.

This small work will be as helpful to doctors as to patients or friends of patients. It gives lists of doctors, hospitals, opticians, and chemists, and information about special clinics (for chest diseases, rheumatic diseases, gynæcological disorders, and venereal diseases, the ambulance service, the blood-transfusion service, mass radiography, registration of births, deaths, and marriages, international certificates of vaccination and inoculation, personal health services (including arrangements for confinements), antenatal and postnatal clinics, infant welfare, foster mothers, child-minder services, day nurseries, home helps, home nursing, loan equipment, diphtheria immunisation, the school medical service, child guidance, the mental-health services, the welfare of the blind and other handicapped people, old people's welfare, housing, sanitary inspection, food inspection, medicinal and public baths, water-supplies, parks, national insurance, family allowances, National Assistance, voluntary services, and many other matters.

It would be an advantage if every borough produced a booklet of this kind; for no two areas are exactly alike in what they offer; and addresses and telephone numbers may be treasures beyond price in a moment of emergency.

In England Now

A Running Commentary by Peripatetic Correspondents

IT is no easier for a pride of sea-lions to enter Britain than it is for a covey of cardiologists to fly out; and the sordid topic of finance crops up at every frontier post to vex the modern traveller. The c.i.f. value is all that matters to the Board of Trade. What is so disheartening is that the cardiologists were merely on loan to the outside world whereas the sea-lions were a gift to us for keeps, more than a fair exchange. Dollar sea-lions are an amenity which we must deny ourselves for the moment, according to the Minister of State, but surely if no more gold flows to the vaults of Texas we ought to be allowed sufficient freedom to look a gift sea-lion in the mouth?

On top of the tariff barriers are set the spikes of ideological conflict. The screening of the immigration officers guards the traditional freedom of England, and in the mirror of the mill-pond McCarthy stands by the Statue of Liberty. But though the sea-lions may have cruised the North Pacific current, unnoticed by asdic and radar, past the Aleutians to the beaches of California before emplaning for Britain, their political intentions were never questioned, except in so far as the principle of the closed shop has become an addendum to Magna Carta. The bureaucratic test to be applied to sea-lions, and perhaps to cardiologists, is "are they educational or entertainment?"

Thus our zoos are licensed to import sea-lions, because zoos are educational institutions. Circuses on the other hand are thought to be so tainted with commercial greed and an element of frivolous entertainment as to be unworthy of a Board of Trade licence. But it must be difficult for a school-child to appreciate the subtle academic distinction between a sea-lion balancing a ball on its nose and one without such accomplishments. Perhaps at the next British Industries Fair it will be permissible to offer the United States a strictly mutual interchange of culture on the basis of one sea-lion for one Rhodes scholar. After all their appearances and performance often have much in common.

* * *

We had to condemn some four dozen tins of evaporated milk the other day. The tins were aged and rusty and emitted a peculiar and highly nauseous odour. The examination was conducted with speed, and with the air of an experienced food-tester we loftily pronounced the lot to be inedible. It was not until we were outside in the fresh air again that the fun began, for the Regimental Medical Officer is required to complete part A of Army Form F.735: "Supplies.—Condemnation Certificate." At first glance this certificate seems to be simplicity itself and a walkover even for a beginner in Army Forms. Such an assessment would be wrong. True, the only writing required is the insertion of the type and quantity of food condemned and one's signature at the bottom of the page. But the certificate states that the food is either "unfit for human consumption" or "unfit for issue to troops," and enjoins us to delete the inapplicable statement. The milk was certainly unfit for human consumption, but if we left the alternative standing then we tacitly implied that the milk was nevertheless fit for issue to troops. "It stands to reason, Sir, that if you say unfit for issue to troops, then it's unfit for humans as well," affirmed the C.Q.M.S., with many years of quartermastering experience behind him. Finally we broke the rules by leaving both statements standing and merely joining them by "and." Everyone was satisfied, prestige was maintained, and the milk was destroyed.

* * *

I was distressed by the defeatist tone of the communiqué from the Charing Cross front which you published last week. I can only hope that active preparations for the Third Battle of Trafalgar are being carried out behind the scenes by the boffins. I look forward to seeing a revival of the medieval hierarchy of falconry as the Civil Service sally forth for England. Greenland falcons for the under-secretaries, peregrines for the principals, goshawks for executive grades, and merlins for the clerical minions. Angels and bandits once more in the London skies. The central night-fighter establishment of barn and tawny owls will impart a solemn reminder of our jeopardy to the morning crowds as they pass those inscrutable mirrors of the human face.

* * *

Whooping-cough was suspected, and we had a blood-agar plate all ready. However, nothing would induce the boy to cough. We retired to discuss tactics over a cup of tea, and on returning to the task discovered that he had reached the plate from the bed and scraped it clean. His mother assures us that he has always been passionately fond of jelly.

* * *

A tinkle on the phone or a trill on the night bell will jerk me instantly out of bed; a whimper from the children does the same for my wife; but the entire household can sleep on oblivious to the clamour of a familiar alarm clock. The duration of the ring makes little difference; some protective instinct tenses us against the psychic trauma of both the short staccato burst and the cerebral vibration of the long diminuendo. The only hope seems to lie in introducing an element of novelty, especially on the eve of important occasions.

The first manœuvres are relatively simple. Merely standing the clock on a different piece of bedroom furniture each night will produce enough variations in pitch and resonance to last about a month if the changes are rung with skill and forethought. After that more drastic measures are needed. Resting the clock on a metal brush-tray or concealing it in some convenient piece of holloware will produce startling acoustic results and tide over another month at least.

But the morning will dawn when all those subterfuges have failed. The trump card must then be played. The technique is based on the waltzing movement of the clock under the bell's vibration. A little platform is built of books, with a sloping ramp leading to the top of the dressing-table; the clock is balanced at the top of the ramp, so that at the appointed hour it jiggles merrily down the slope and lands with a clatter on the brush-tray.

For those who can tolerate the syncopation of raucous ticking throughout the night, a pair of clocks offers hope. The onslaught of the first drags the sleeper from the unconscious to the subconscious state, and, unless the silence is unduly prolonged, the second burst forces him from the subconscious to the conscious. No doubt a trinity of clocks would arouse even his conscience.

The really strong-minded, of course, rely upon will-power; but our frail minds find the attempt harrowing. We click the light on every half-hour to peer at the wrist-watch on the bedside table. Our uneasiness is communicated to the rest of the household, more lights click on and off, and someone can be heard making tea and rattling the aspirin bottle. The morning dawns on a haggard family, oversleeping with the exhaustion of keeping awake.

So now we are thinking of getting an electric alarm; in place of the normal tick they have a soporific purr and the buzzer is so much gentler and kinder, yet more insistent, in its call. Only a gentle hum penetrates the subconscious, and by the time the note swells to full harmony the transition is complete. But as it continues its song until switched off, it raises its own problems. On whose side of the bed should it be fixed? Does human frailty demand that it should stand beyond reach of the bed? And does not the caprice of the Electricity Board make it prudent to wind the alarm clock?

Our dream clock will embody a time-switch which will turn on, in ordered sequence, the immersion heater to boost up the bath-water, the bedroom kettle for the morning tea, and then the bedroom and breakfast-room radiators. After a discreet interval it will sound the alarm in gentle crescendo; the bedside lights will come up gradually; and, because self-respect must be maintained at all costs, the electric blanket will switch itself off.

* * *

Overheard in the Lab.—Chief (looking at sections from a biopsy of a femur after a series of pathological fractures which had failed to unite): "What is the patient's occupation?"

Houseman: "Curiously enough the man is a joiner."

Chief: "A non-union man, I expect."

Letters to the Editor

THE HOSPITAL SERVICE

SIR,—I read with great interest Professor Thomson's article in your issue of Feb. 20, and, as a medical officer of health, I was particularly interested in the shorter average stay of patients in American hospitals, as compared with the custom here. This, of course, cannot be universal, for in Cambridge, for instance, a scheme for early discharge home is well established. This scheme was described at the annual summer school of the county-borough group of the Society of Medical Officers of Health last year, and it involves the closest coöperation between hospital staff, general practitioners, and the local-health-authority services. As coördination of the three artificial divisions of the health service improves in all areas, so it may be hoped an ever more economic use will be made of hospital beds.

There is another aspect of the matter to which some attention has been paid in Darlington—namely the training of housewives in the elements of home nursing. When all is said and done, illness, like most other things, is a family matter, and doctors, nurses, and other helpers are auxiliaries to what the family can provide for itself. At least, this would seem to be the natural order, and too great a reliance upon services supplied by the State seems to lead in due course to a disorder involving even these services themselves. The more that wives, daughters, mothers, and sisters are prepared to undertake, and the more responsibilities they will accept, the better for society; and nursing is a natural and recurrent occasion for their service.

A number of courses, each of six sessions given by health visitors, have been arranged for women in Darlington through various groups and organisations with whom the health department is in contact. At first the women came in response to fairly intense propaganda by talks and bulletin letters. When this barrage was halted no further applicants came forward and I thought that this would be one more good idea to end in failure. But after a lapse of some months a spontaneous demand arose for a continuation of the courses and more have been given during the last several weeks. It seems to me to be potentially a most useful development in health education.

On quite another front, home nursing might be included as a subject in the last year of compulsory schooling, not only at senior modern but at junior technical and grammar schools as well.

Health Department, Darlington. JOSEPH V. WALKER Medical Officer of Health.

THE CLARE WAND FUND

SIR,—At the last Annual Conference of Local Medical Committees the chairman of the conference gave a brief report on the progress of the Clare Wand Fund, which it will be remembered was established as a mark of appreciation of the services rendered to the profession by the chairman and secretary of the General Medical Services Committee during the course of the long negotiations which led up to the Danckwerts award.

The trustees of the fund wish to express their grateful thanks to all those local medical committees and individual general practitioners who have responded to their appeal and are glad to be able to report that as a result upwards of £12,000 now stands to the fund's credit.

When making their appeal the trustees stated that the principal object of the fund would be to provide educational assistance to those in general practice, and since then a good deal of thought has been given to the precise use to which the fund should be put.

Firstly, the trustees wish to encourage projects which will enhance the prestige of general practice itself, and they have been in touch with a number of organisations who have shown a good deal of interest in the establishment of the fund and offered much help and encouragement.

Secondly, the trustees have examined a number of specific projects which they consider would be appropriate for the Clare Wand Fund to undertake, and the following are among the suggestions that have been made:

(1) Travelling scholarships to study methods of practice, either from the point of view of clinical method or of organisation.

(2) Financial help to general practitioners (*a*) to enable them to carry out research, particularly in subjects which are regarded as primarily the concern of the general practitioner; and (*b*) to assist them to take postgraduate degrees or diplomas, including original work for a thesis.

(3) Sponsored lectures and demonstrations for groups of general practitioners in their own localities for purposes of revision and keeping up to date.

For the time being, the trustees have decided to keep the allocation of grants approximately within the limits of the fund's investment income, and this will mean that for the next twelve months about £700 will be available to finance approved projects. It is obvious that this figure may restrict the trustees in making grants for research projects which they might otherwise have wished to encourage, and it is hoped that in certain cases it may be possible to provide financial assistance by means of a loan.

These suggestions are tentative and exploratory and any additional suggestion which comes within the broad objective of the fund, whether designed to enhance the status of general practitioners, or individual items of research, will be sympathetically examined.

The trustees are anxious to receive all the help they can in launching the fund, and they hope that general practitioners who wish to avail themselves of the opportunities which the fund offers, either for purposes on the lines indicated or for other projects which they themselves wish to suggest, will not hesitate to get in touch with them.

Full details should be sent with any application, which should be addressed to the secretary of the Clare Wand Fund, Mr. R. H. Currer, at British Medical Association House, Tavistock Square, London, W.C.1.

S. WAND
Chairman.

THE DUMPING SYNDROME

SIR,—I should like to comment on two assertions made by Dr. Pulvertaft in his very interesting article of Feb. 13 and discussed in your leading article. My comments are based on a series of over 100 Polya-type gastrectomies for duodenal ulcer, in which a Roux en-Y anastomosis was performed in order to prevent the post-gastrectomy syndrome. This series was published last year by Mr. P. St. G. Anderson and myself,[1] and showed the effect of deviation of the afferent loop on the post-gastrectomy syndrome.

Dr. Pulvertaft has claimed that the vasomotor symptoms after partial gastrectomy are caused by the excessively rapid absorption of sugar from the intestine. In our series of Y anastomoses undertaken to prevent the post-gastrectomy syndrome, with special reference to bilious vomiting, there is no single case with vasomotor symptoms. Furthermore, I have converted 12 cases of "dumping" after Polya partial gastrectomy to a Roux en-Y anastomosis. All 12 patients had bilious vomiting and 5 had vasomotor symptoms. Not only were they all relieved of bilious vomiting, but also the vasomotor symptoms in the 5 cases completely disappeared.

My second comment is concerned with the statement that the higher the level of transection of the stomach the greater the risk of "dumping," and that the incidence of vasomotor symptoms can be correlated with the extent of resection, but not with any particular modification of

1. *Brit. med. J.* 1953, ii, 598.

the Polya anastomosis. I feel bound to say that the evidence we have obtained from our series suggests the opposite view. In our series of Y anastomoses the level of gastric transection is very high, only one vasa brevia being left on the lesser curvature of the stomach. The purpose of this, of course, is to remove as much of the acid-bearing area as possible in order to avoid an anastomotic ulcer. None of our patients has had bilious vomiting and none has vasomotor symptoms. The gastrectomy is a high one with a modified Polya anastomosis, and the result of the operation is that the "dumping" syndrome has disappeared from our follow-up department.

We appear to have brought our results into line with those claimed for the Billroth-I, jejunal replacement, and colonic replacement operations. All these, including the Roux en-Y operation, have one feature in common—namely, they are spared the handicap of an afferent loop.

Swindon Victoria Hospital,
Swindon, Wiltshire. J. EWART SCHOFIELD.

CERTIFICATES

SIR,—After the letter from a personnel manager, Mr. Van den Bergh (Jan. 16), I was glad to read answers calling for a rally to Morality and Idealism. It is, however, not immediately possible to rearrange the industrial and economic world to avoid the difficulties and pitfalls of medical certification. I would expect the subject of the suitability of the present forms of fitness certificate to be discussed when the present thorough-going study of sickness absence is completed by the Medical Research Council.

Meanwhile, may I be permitted, as a whole-time industrial medical officer who came originally from general practice, to put forward some observations based on practical experience in heavy industry?

Firstly, a firm is guilty of profligacy if it proposes to pay an employee for absence due to sickness (whether of short or long duration) without giving thought to the required form of certificate, to whether the certificate is to be furnished to the man or to the firm, and to whether payment for it is to be made by the man or the firm. This encourages, if not condones, slackness by all concerned. The doctor, for his part, must be guided by the principle that, on an unsubstantiated story, the patient must have the benefit of the doubt.

It should not be beyond the wit of personnel managers, in consultation with doctors, to evolve a form of certificate which would be helpful.

Briefly, the sickness absence in the industry with which I am concerned tends to follow a curve which suggests that the amount of time lost is very strongly influenced by social, economic, and industrial factors, rather than by purely medical conditions. The fluctuations in time lost are largely due to employees having a longer or shorter time off per case rather than a greater or lesser number being away at the same time. The day of stopping or re-starting work is covered by a certificate (in our case the sight of the National Health Insurance certificate suffices).

The doctor has simply to state that the man is or is not fit for work. In the majority of cases the first certificate is given for a condition whose onset is real or apparent. The doctor is able to certify "unfitness for work" honestly with little or no intimate knowledge of the work involved. When recovery occurs, however, it is usually a slow natural process; transition to fitness may be gradual and almost imperceptible from day to day. Yet the doctor must, in effect, say one day that the patient is unfit, and on the next certify him fit. This is an artificial restriction of his expression of opinion in which he can feel little compunction in being guided less by his findings and knowledge of the case than by the patient's own description of the physical requirements of the job and the physical influences of his working environment. Possibly psychological, social, or economic influences at home may be considered.

It may help personnel managers to consider that the bald certificate of inability to work may in fact represent the doctor's opinion that work may be "inadvisable" for one or more of the following reasons:

(1) The patient is confined to bed at home or in hospital.
(2) Working would interfere with his treatment at home or elsewhere.
(3) Working would lessen the chance of a full recovery.
(4) Work would retard his recovery of full health.
(5) He cannot work because of travelling difficulties.
(6) He should not work because of danger to his workmates—e.g., disease carriers, epilepsy, &c.
(7) He should not work because of the stress of his job—piece-work, responsibility, anxiety, &c.
(8) He is unable to do his own job and a change of job, or rehabilitation job, does not appear to be available.

All these circumstances must be covered by the phrase "incapable of work," not even "incapable of *your* work."

I suggest with diffidence that, where there is a whole-time or part-time experienced industrial medical officer who has the blessings of coöperation from the general practitioner and the confidence of the employees, cases of doubt can be settled with fairness to all concerned. Such coöperation does not, however, abolish the inadequacy of the "crude" certificate.

Finally, I cannot resist the following observation: the personnel manager who dares to take action when a man brings an illness certificate after being seen at a football match is as rare as the doctor who would refuse certificates on similar grounds. Once a firm has put a premium on sickness absence by payment it must carry the skrimshanker or abolish the certificate—or employ a doctor directly or indirectly, as do those experts, the insurance companies.

Gretton, near Corby,
Northants. GILLIES MACBAIN.

ACUTE BORAX POISONING IN AN INFANT

SIR,—Borax poisoning has been reported in the past following a single large dose or the cumulative effects of repeated small amounts. Many instances have been due to ill-advised medication—i.e., the dusting of skin lesions,[1 2] mistaken injections[3] and enemas,[4] flushing serous cavities,[2 5] and following repeated ingestion when borax was used as a food preservative. The following is a case of direct "curiosity-poisoning."

A girl of 13 months was admitted to hospital two hours after eating some white paste from an old tin in the garden; the paste was identified by the laboratory as borax. The patient had vomited several times at home and was soiled and cyanotic. Her temperature was 104·8°F (rectal), pulse-rate 160, and respiratory-rate 40. The tongue, buccal mucosa, and pharynx were normal.

She became comatose almost at once, with a waxy pallor, impalpable pulse, and a shallow, bubbly, infrequent respiration which lapsed into Cheyne-Stokes' rhythm. She was flaccid and her tendon reflexes were absent, but three episodes of widespread muscular rigidity occurred with neck retraction, arched back, and extended limbs. These episodes lasted ten to twenty minutes and during them convulsive muscular tremors were observed. Her eyes were deviated upwards and the pupils were dilated and fixed. After an attack the periods of apnœa increased and death seemed imminent.

Intranasal oxygen was administered and intramuscular nikethamide (10 ml. in divided doses) was given within the next $1^1/_2$ hours. Artificial respiration and continuous suction were carried out, and, when the radial pulse returned, gastric lavage was performed and large quantities of borax recovered. No evidence of hæmorrhage into the gastro-intestinal tract was found.

1. Watson, E. H. *J. Amer. med. Ass.* 1945, **129**, 332.
2. Pfeiffer, C. C., Halman, L. F., Gersh, I. *Ibid*, p. 266.
3. McIntyre, A. R., Burke, J. C. *J. Pharmacol.* 1937, **60**, 112.
4. Bazin, A. T. *Canad. med. Ass. J.* 1924, **14**, 419.
5. Ross, C. A., Conway, J. F. *Amer. J. Surg.* 1943, **60**, 386.

Although the child's circulation rallied steadily, apnœa persisted for about 2 hours, necessitating continuous artificial respiration. Intermittent suction was continued and intranasal oxygen was replaced by a mixture of 5% carbon dioxide to oxygen.

Gradual recovery took place and three hours after admission the pulse was steady at 146 and respiration established at 26. Coughing and crying were returning. In another two hours the patient was sitting up bewildered, but fully conscious and taking fluids by mouth. There was transient internal strabismus and inability to focus properly, but no other signs in the central nervous system. The temperature was 100°F, pulse 120, and respiration 40. Crystalline penicillin (300,000 units 6-hourly) was started.

Next morning slight signs of an aspiration pneumonia had developed, but this responded rapidly. A sparse maculopapular rash had also appeared on the chest and cheeks. The lesions were $^1/_2$–1 in. in diameter, discoid, deep red, and very itchy. Recovery was uneventful and the child was discharged fit 8 days after the original episode.

In the outpatient department three weeks later she appeared perfectly well.

The patient's grandfather identified the substance as flux for his soldering equipment; this is in fairly common household use. It had a sweetish, citrous flavour not objectionable to a child.

This reaction to a large dose of borax is "textbook"—i.e., initial vomiting, diarrhœa, and hyperpyrexia, followed by meningism and progressive shock, and the appearance of a "boiled-lobster" erythematous rash.[6] But there are two points worth comment:

(1) The persistence of apnœa after good steady pulse was established.

(2) Complete and rapid recovery after deep coma of three hours' duration; this is remarkable in view of the child's moribund condition during that time, and the fact that borax is only slowly excreted, the process not being complete for five days.[6]

I wish to thank Dr. I. G. Wickes and Dr. A. B. Anderson for their advice in preparing this report.

North Middlesex Hospital, London, N.18. M. B. LIVING-TAYLOR.

WELCOME TO THE SANATORIUM

SIR,—Working in a hospital with a pleasant atmosphere and a humane approach, I have sometimes thought that correspondents in *The Lancet* who complained of an impenetrable wall between themselves and the doctors were unlucky or stupid. But now I wonder.

A young woman, with two children she had never left before, fell ill with a pleural effusion. She came to our ward, we grew the bacillus and called in the chest doctors. A few days later the young woman, but not her doctors, heard that she could be admitted next day to a sanatorium. With this news came the following printed *Regulations for Adult Patients*:

Admission to the Sanatorium is normally arranged through County Tuberculosis Officers. The control of pulmonary tuberculosis requires a long and tedious period of treatment and the following regulations are intended to assist in maintaining a smooth-running community life. Patients are expected to provide a signed statement before admission that they have read the rules and are prepared to conform to them.

Clothing. Patients should bring with them complete changes of day and night attire, preferably pyjamas, and all clothing should be plainly marked with the owner's name, as no responsibility can otherwise be accepted for losses in the laundry or elsewhere. A rubber hot-water bottle is useful in cold weather.

Thermometers are provided free of charge on admission.

Disposal of Sputum. Spitting, except into the proper receptacles, is strictly forbidden. Patients should avert their faces and cover their mouths with a handkerchief when coughing. To avoid carrying sputum droplets men's faces must be kept clean shaved.

Smoking is permitted only at specified times which are indicated, on time tables of the daily routine, in the wards.

Gambling in any form is forbidden.

Walking outside the Sanatorium grounds is permitted during certain hours provided patients conduct themselves in an orderly manner.

Public Houses are out of bounds.

Public Conveyances must not be entered without permission. The town of —— is out of bounds except with special leave.

Leave of absence. In such cases as the medical superintendent thinks suitable the following maximum amount of leave may be granted to patients who are sufficiently ambulant.

(*a*) one half-day every month.
(*b*) one weekend every three months.
(*c*) six consecutive days after one year in the sanatorium.

Gramophones or wireless sets are not permitted.

Food does not require to be privately supplemented and any brought by visitors must be submitted to the Ward Sister who has full discretion regarding its disposal.

The Medical Superintendent may summarily discharge any patient for breach of the regulations or for unsatisfactory conduct.

This seemed to cover all the points, but apparently it didn't. "It doesn't say how long leave I get after ten years," said the young woman.

X.Y.Z.

POLIOMYELITIS AND INOCULATIONS

SIR,—Mr. Benjamin and Mr. Gore give an unsatisfactory reply to my letter (Feb. 20). They say that "though the calculation of the exposed to risk in a problem of this kind is controversial (and we certainly do not feel dogmatic about it), the course finally adopted was held to be the most suitable in the circumstances." There can be no controversy whatever and the course adopted was quite wrong. A child who is injected three times is at risk three times; there *is* "replication of exposure." I should therefore feel happier if we were told just how the corrected calculations were made and if we were given the results, for the conclusions of this inquiry have been widely quoted. (For example, are the dates of *all* injections known, for otherwise some awkward assumptions have to be made?)

Since the investigators in this field have probably been considerably influenced by the conclusions of the original inquiry [1] by Bradford Hill and Knowelden, I think it is necessary to add some comments on that inquiry. For one may use the data given by Mr. Benjamin and Mr. Gore to demonstrate the inadequacy of the controls in the original inquiry by Bradford Hill and Knowelden. It is a fairly simple matter to show from the L.C.C. data that the expected proportion of children within a month of an immunising injection was about 1 in 7 for children aged 9–23 months in the county of London at any time during the summer of 1949. (That this is reasonable can be seen independently if we assume an average of $2^1/_2$ injections per immunised child at monthly intervals; for such a child will thus be within a month of an injection for $2^1/_2$ months out of 15.)

But in the inquiry by Bradford Hill and Knowelden, which covered this period of time and in many cases the identical children, they found only 1 child within a month of an injection out of 71 control children aged 0–23 months. Few of these children would be aged 8 months or younger as the more detailed age-distribution shows (two-thirds had passed their first birthday). Thus, we would expect about one-seventh—or 10, not 1—to be within a month of an injection. As 11 of the comparable 71 poliomyelitis cases were within a month of an injection, we are forced to conclude that it is the poliomyelitis cases which are normal as regards their inoculation history and the controls which are abnormal.

That the controls were biased is not altogether surprising for great difficulty was found in obtaining them. Only 164 controls were found for 410 poliomyelitis cases. Certainly the decision to use as controls children who were

6. Sollmann, T. Manual of Pharmacology. Philadelphia and London, 1949; p. 603.

1. Bradford Hill, A., Knowelden, J. *Brit. med. J.* 1950, ii, 1.

about to develop measles was an unfortunate one. For young children with older brothers and sisters are more likely to get measles and less likely to be immunised. Also, might not a brother or sister of the child be suffering from measles during the vital 28 days, thus deterring the mother from having the younger child immunised during that period? How does the notification date in a measles case compare with the date of the first signs of any distress in the child?

It may be objected that not all the controls were measles cases and that nearly half were "birthday controls." But the two sets of controls were not independent in the sense that one set was assigned to half the poliomyelitis cases and the other set to the other half. A "birthday control" was only used if a measles control could not be found. It would be interesting to know the inoculation histories of the particular 11 matched controls who were paired with the 11 poliomyelitis cases which occurred within a month of an injection. How many of these 11 were measles controls?

Just why the controls contained only 1 child within a month of an injection we may never know, but biased they certainly were in this respect.

The weaknesses of two later American inquiries [2] were commented on in my letter last year.[3]

London, W.C.1. P. G. GRAY.

PATIENT'S CONSENT

SIR,—I was interested to read in your issue of Feb. 20 (p. 421) of a hospital management committee's contention that "if a patient comes to hospital either on doctor's advice or on his own initiative, he is deemed to agree to receive treatment."

Clearly, one ought not at present to comment on this particular case, but this dictum itself should not pass unchallenged. Whatever its standing in law, it seems to be ethically unsound, and conducive in hospital practice to abominably bad manners. Such a principle would condone our examining a patient, and then, without further explanation or permission, injecting his varicose veins, performing a myringotomy, or administering electroconvulsive therapy.

Such an attitude might have passed muster a generation or so ago, when medical textbooks referred to "the hospital class" as though to a sub-human species lacking both intelligence and sensibility. In this decade, much emotion has been expended on the sanctity of the doctor-patient relationship. Was it for this?

Hextable, Swanley, Kent. C. H. NEVILLE-SMITH.

SILICONE-RUBBER TUBING

SIR,—The observations of Dr. Nunn (Feb. 13) on the short life of thin rubber tubing in Malaya prompt me to draw attention to the possible value of silicone rubber in the tropics. Silicone-rubber tubing remains unchanged over a wide range of temperature and humidity; it may be repeatedly sterilised, either by dry heat or by superheated steam, without perishing.

A further point in its favour emerged in a short series of experiments in which I found that whilst some common fungi—e.g., *Aspergillus niger*, *Penicillium citreum*—would grow on sterilised natural rubber, they were quite unable to do so under identical conditions on silicone rubber ('Silastomer' 50 and 152).

The value of this material is already widely recognised in industry, and it seems that it is worthy of a trial in medicine, particularly where temperature and humidity, combined with repeated sterilisation, lead to rapid deterioration of natural rubber.

King's College Hospital, London, S.E.5. J. M. BRUDENELL.

2. Anderson, G. W., Skaar, A. E. *Pediatrics*, 1951, **7**, 741. Korns, R. F., Albrecht, R. M., Locke, F. B. *Amer. J. publ. Hlth*, 1952, **42**, 153.
3. Gray, P. G. *Lancet*, 1953, ii, 91.

CORTISONE IN CHRONIC ADRENAL INSUFFICIENCY

SIR,—Dr. Fourman and Dr. Horler (Feb. 13) stress that cortisone may be of great value in certain cases of adrenal insufficiency. Its use would correct the deficiency of the corticosteroids affecting cellular metabolism. While the majority of patients with Addison's disease show a deranged mineral balance which can be corrected with deoxycortone, some cases may show a disturbed protein and carbohydrate metabolism and in these patients deoxycortone may not be sufficient to restore them to normal conditions. I would like to summarise two cases which support these statements: both came to necropsy and in both the adrenal glands were grossly atrophic, but the clinical and biochemical features were different.

CASE 1.—A man, aged 37, was sent to hospital on Jan. 26, 1949, after three weeks' influenza-like illness, with profound asthenia, generalised aching, and nausea. There was pigmentation of skin and mucosa, considerable muscular weakness, and slow cerebration; the blood-pressure was 80/50 mm. Hg. He had been well until three weeks before admission. The biochemical findings were:

Serum-sodium	271 mg. per 100 ml.
,, potassium	26·6 ,, ,, ,,
,, calcium	11·6 ,, ,, ,,
,, magnesium	2·4 ,, ,, ,,
Total fixed base	132·6 m.eq. per litre
Serum-chlorine	270 mg. per 100 ml.
,, bicarbonate	39·5 vol. %
,, inorganic phosphate	6·9 mg. per 100 ml.
,, non-protein nitrogen	75 ,, ,, ,,
,, albumin	4·27 g. ,, ,,
,, globulin	2·63 ,, ,, ,,
,, total protein	6·90 ,, ,, ,,
Total determined acid	114·0 m.eq. per litre
Serum-urea	106 mg. per 100 ml.
Blood-sugar	100 mg. per 100 ml. (time 10.45 A.M.)

Treated with deoxycortone acetate, he rapidly improved and in four days the blood chemistry was practically normal. He was kept well on deoxycortone implants every eight months approximately until Nov. 20, 1952, when he was admitted in a semiconscious condition. He had been warned to report if any mild infection developed but neglected to do so, and was sent to hospital after three or four days with fever and symptoms of a "cold." He did not respond to large doses of deoxycortone and 'Eucortone' and he died two days later.

Post-mortem examination showed a macroscopically and histologically normal pituitary gland and extreme atrophy of both adrenal glands; the left gland was about a tenth of its normal size, and the right one about a quarter. Sections of the adrenals showed gross cortical atrophy and no tuberculous infection.

CASE 2.—A woman, aged 49, was seen in the outpatient department on Feb. 10, 1953. She had been unwell for over a year, with general weakness and malaise, poor appetite, loss of weight, and occasional nausea. For two months she had been in bed most of the time because of the muscular weakness. The generalised pigmentation included the lips and the mucosa surface at the corners of the mouth. There was considerable muscular weakness and a very obvious mental dullness with great apathy and poverty of expression. Her blood-pressure was 140/80 mm. Hg. I thought she might be a case of hypopituitarism, and her admission was arranged. On Feb. 11 the biochemical findings were:

Serum-sodium	311 mg. per 100 ml. (135 m.eq. per litre)
,, potassium	22·5 ,, ,, ,, (5·77 ,, ,,)
,, chlorides (as NaCl)	600 ,, ,, ,, (102·5 ,, ,,)
,, albumin	4·1 g. per 100 ml.
,, globulin	1·7 ,, ,, ,,
,, proteins (total)	5·7 ,, ,, ,, (A/G = 2·56/1)
Blood-urea	52 mg. per 100 ml.
Fasting blood-sugar	77 ,, ,, ,,
17-ketosteroids	0·5 ,, ,, day

The basal metabolic-rate was −23%. Kepler's test was in favour of adrenal insufficiency. The Wassermann reaction was negative and a radiograph of the chest was normal. Several other estimates of mineral elements in the blood were within normal limits. Although it was thought that pituitary insufficiency might be the main factor, she was treated with deoxycortone acetate (5 mg. b.d.), and 300 mg. was implanted

on April 20. She never showed any great improvement and very gradually deteriorated until on May 15 she became semicomatose. She was given cortisone, but she died within twenty-four hours.

Necropsy showed normal architecture in the pituitary gland, although there was a relative decrease in the number of α and β cells compared with chromophobe cells. The adrenals were very small (left, 1·2 g.; right, 0·5 g.), and section showed advanced cortical atrophy with patchy fibrosis and lymphocytic infiltration. The thyroid was normal.

In the second case cortisone was used too late and it seems reasonable to assume that had it been given earlier the outcome would have been different.

St. Alfege's Hospital, London, S.E.10. E. T. BASSADONE.

PREVENTION OF AIRBORNE INFECTION

SIR,—The prevention of airborne infection seems to be of the greatest importance in the treatment of burns, judging from the results of Dr. Lowbury's work (Feb. 6), and it seems strange that no reports have been forthcoming on the use of continuous-flow germicidal aerosols in wards, theatres, and dressing-rooms in use for burns patients. Aerosols of hexylresorcinol have been shown by numerous workers over the past 15 years to be rapidly lethal to airborne vegetative bacteria, 90–95% kills in 5 minutes being reported from the use of this compound at an aerial concentration of 0·2 mg. per c.m.

Thermal generators capable of treating 5000 c. ft. of air per hour, at a cost of under ¾*d.* per hour, are available and can be plugged into existing mains; renewal of the germicide cup after 500 hours use is the only attention required. This surely is a far cheaper, easier, and quicker method of "air-conditioning" than the installation of bulky air-conditioning plant. I would add that it has been used as a supplement where air-conditioning was in use. The rate of kill quoted above is equivalent to about 30 air-changes per hour in the removal of infective agents. Air changes of that order can cause considerable discomfort, amounting, as they do, to a minor gale.

Hexylresorcinol aerosol should prevent the infection of patients by the "resident contaminants" and eventually remove these altogether, at the same time preventing cross-infections from patient to patient and staff to patient. The prevention of direct droplet infection must, of course, still be taken care of by masking, barrier-nursing, and other means.

Avebury Research Laboratories (Consulting Entomologist), Goring-on-Thames. A. HOWARD BAKER.

PLASTIC SPUTUM FLASKS

SIR,—The sputum flask now issued by the London County Council, and described by Dr. Hartston last week (p. 445), appears satisfactory in basic design; but the method of use described can be improved upon. Dr. Hartston suggests that antiseptic be placed in the pocket flask before travelling: this involves the risk of spilling when in use or of leakage if the cap is not screwed on tightly. Both the antiseptics suggested—lysol and 'Miltherex' ('Milsol')—are not innocuous if so spilt. If miltherex is used, and this is by far the most satisfactory agent yet on the market, the sputum can be dissolved and sterilised by adding the fluid to the flask *after* 12 to 24 hours' expectoration. The flask can then be cleaned very easily without boiling. If this procedure is followed it can be carried dry, thus eliminating the danger of spilling a caustic and bleaching agent.

A half an ounce of miltherex advised by Dr. Hartston will certainly be inadequate to dissolve the sputum of a freely expectorating patient, as I have already shown.[1] It will be found that two to four ounces will be required in many cases.

Finally, I doubt whether the new flask, with its screw-threaded orifice has, at the bedside, any outstanding advantages over the easily available one pound jam jar with its smooth-surfaced, wide opening and cheap plastic lid. The latter is obviously more easily cleaned.

Hammersmith Chest Clinic, London, W.12. PETER STRADLING.

1. Stradling, P. *Lancet*, 1953, ii, 1185.

UMBILICAL HERNIA IN INFANTS

SIR,—Your annotation of Feb. 6 about Dr. Woods's paper seems likely to give her the publicity which she deserves. A controversy has now become apparent between Dr. Woods's supporters on the one hand, and "strappers and binders" on the other. A further cleft is developing between the "S and B" group upon the length and distribution of the restrictive apparatus. Perhaps your intention was to describe the length, arrangement, and distribution of the strapping which should not be used.

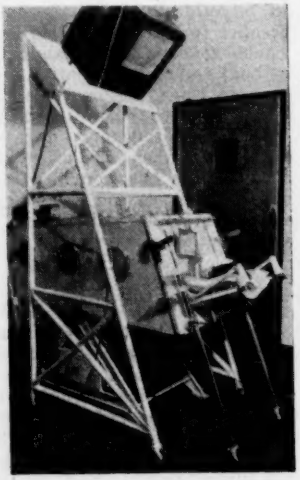
For very many years now, I have avoided all forms of strapping or binding for umbilical herniæ, partly because of the facts now published by Dr. Woods, and partly because many babies keenly resent these appliances and demonstrate their resentment by crying. Crying and coughing are two most efficient methods of forcing abdominal contents into a hernial sac—truss or no truss.

Bristol, 8. W. A. JACKMAN.

TELEVISION FOR RESPIRATOR PATIENTS

SIR,—To the patient with respiratory paralysis who must spend a long time in a respirator, television is a boon. But it is not always easy to arrange.

A patient lying prone in a respirator can see the screen of an ordinarily placed set by the use of two mirrors. But this involves awkward adjustments and an alteration to the set to show an inverted picture on the screen; the final image can then be seen by the patient overhead in the second mirror, but is not readily visible to relatives or friends who may be sitting by. The white ceiling may be used as the screen of a projection television set placed on its back, but the ceilings in this hospital are too near the patient's head to give clear definition of so large a picture.



Captain G. T. Smith-Clarke, chairman of the Coventry Hospital Management Committee, arranged to have a gantry made from welded tubular steel, on which a television set could be securely perched at a suitable angle, as shown in the accompanying figure. The relatives sitting behind the patient's head also have a satisfactory view. This device proved a great success, and another one has recently been made for a second respirator patient.

The gantry is 7 ft. 2 in. tall at the back and 6 ft. 2 in. at the front of the sloping platform on which the television set is fixed. The width is 3 ft. The slope of the platform is 60° to the horizontal. The screen is a little bigger than 9 in. wide, and it is 4 ft. 2 in. from the patient's eyes, with the gantry in its optimum position. To protect the case of the television set 'Sorbo' rubber is used on the platform and under the retaining batten. The four legs of the gantry are mounted on castors, so that it can be moved back out of the way when not in use.

Whitley Hospital, Coventry. J. F. GALPINE.

REPAIR OF HERNIÆ WITH NYLON MESH

SIR,—Since 1951 there has been a close postoperative survey of all inguinal herniæ in men treated in the Liverpool United Hospitals. For several years now, Mr. S. V. Unsworth and his registrars have been carrying out a repair using ' Nylon ' tricot in a manner very similar to that described by Professor Stock in your issue of Feb. 20. 47 cases have been so repaired since the survey began on July 1, 1951, but only 23 have at present had their routine examination one year after operation. All were sound, except a man of 59 years who had (unknown to himself) a direct recurrent sac at the pubic end of the canal; this was excised and the defect repaired, and the operation notes record " surprisingly little fibrosis, layers defined easily, but little evidence of presence of nylon tricot."

There is one other important feature: 4 cases of the 23 became infected, and although 2 of them were healed within five weeks, 1 discharged for four months, and another for nine months. As with surgical modifications, judgment must await the test of time, but these findings suggest that infection after this type of repair can be particularly unfortunate.

St. Helens, Lancashire. AUSTIN MARSDEN.

SIR,—I was interested in Professor Stock's report of the 12 herniæ he has treated successfully by the insertion of pieces of nylon mesh, or net.

For the last three years it has been my practice to treat all inguinal herniæ in patients over fifty and all those over twenty with recurrent hernia, with a nylon-net implant. I have treated 72 patients, the oldest being a man of eighty-seven with a large irreducible scrotal hernia. In 2 cases the hernia has recurred.

Although it is true, as Professor Stock asserts, that nylon is inert in the tissues, I think he may find that a small proportion of persons are sensitive to it. I have had to excise one net because of a persistent sinus, and the sections showed a severe foreign-body reaction around the nylon. Prof. D. M. Douglas, who is also testing this method, tells me that he has had a similar experience.

All Saints' Hospital, Bromsgrove. F. S. A. DORAN.

RELATION OF CANCER TO MARRIAGE AND CHILDBEARING

SIR,—In a recent article in your columns,[1] I mentioned that death-rates from breast cancer were in general higher amongst single than married women, but that an exception apparently occurred at ages under 35. It had been noted by a number of observers that the rates were higher amongst married than single women at these younger ages. In England and Wales in 1948–49 the figures I gave (death-rates per million) were:

Age	*Single*	*Married*
15–24 ..	1 ..	1
25–34 ..	21 ..	33
35–44 ..	236 ..	200
45–54 ..	663 ..	469

At ages over 55 the excess mortality of single women continued.

In his letter of Jan. 9, Dr. Kühne sagaciously pointed out that the peculiarity at ages 25–34 might be explainable by the increasing proportions of married compared with single women at increasing years of age within the age-group, and suggested that a way to test this possibility would be to standardise the rates for married and single women within the ten-year age-group. This I have now done. To ensure reasonably accurate population estimates of single and of married women at each single year of age, I used unpublished data from the 1951 Census 1% Sample, and accordingly calculated cancer-of-breast death-rates for the years 1950–52.

1. Logan, W. P. D. *Lancet*, 1953, ii, 1199.

The results are as follows:

Age	*Crude rate per million*		*Equivalent average death-rates (average of rates for single years of age)*	
	Single	*Married*	*Single*	*Married*
16–24 ..	0·5	4	0·7	2
25–34 ..	24	31	29	32
35–44 ..	241	213	239	214

The effect of standardisation has been, as Dr. Kühne foresaw, to reduce considerably the excess mortality of the married women under 35; but it has not eliminated it, and still less has it been able to transfer the excess mortality over to single women, as at ages from 35 upwards.

I therefore adhere to the view that I expressed previously that, in contradistinction to older ages, the risk of dying from cancer of breast at ages under 35 is greater amongst married than single women.

General Register Office, London, W.C.2. W. P. D. LOGAN.

WHAT IS ULCERATIVE COLITIS?

SIR,—Mr. Brooke, in the rôle of the friendly sailor, welcomes me upon the deep waters in his letter of Feb. 13, and almost immediately starts to fire torpedoes about me. Most of these, however, are spent and have missed the target. Many of his points I dealt with in my letter of Jan. 16; but I shall reply briefly to the new issues raised.

I should like to remind your readers that, on Jan. 16 I pointed out that I was speaking on behalf of the X-ray department at St. Mark's and not voicing the opinions of all the staff.

The term " regional colitis " does not suggest a lesion similar to Crohn's disease, occurring at different levels in the colon, as Mr. Brooke hints: regional colitis is simply a localised area of inflammation which may start in any part of the bowel from the cæcum to the rectum, and there may be a number of such foci of inflammation. If terms such as " proctosigmoiditis " are preferred by some, to draw special attention to this area, then no doubt their use will continue. Further, make no mistake, proctosigmoiditis does not always proceed to ulcerative colitis. It may remain stationary, but when it spreads it commonly moves higher up the bowel, sometimes even right round the colon to the cæcum, still perhaps as a simple mucous or perhaps granular colitis. Only a few cases go on to ulceration.

I am disappointed at Mr. Brooke's remarks about " thixotrophic gelocolloid suspension of barium," which he refers to as one of the " newer preparations of barium." While an assistant in the X-ray department at the London Hospital in 1928, with the then director, the late Dr. Gilbert Scott, I was associated with the use of ' Raybar,' a thixotrophic gelocolloid, for meal and enema work. In 1929 I introduced it to St. Mark's Hospital and later to various other hospitals in London and the provinces. The thixotrophic gelocolloids have now been largely abandoned in favour of the dispersion colloidal solution of barium, known as ' Micropaque,' which has been on the market for some years and on which I carried out some of the original tests for the manufacturers. I believe that at Queen Elizabeth Hospital, Birmingham, research on steatorrhœa has been in progress for some time and perhaps the older preparation of raybar may have had certain advantages and so its use was continued.

Mr. Brooke says that at Birmingham the lesions of enterocolitis are revealed only sometimes and with difficulty by thixotrophic gelocolloid barium. I suggest a trial of the more modern preparation and perhaps assessment of the radiological changes on the lines I have indicated. There is no question of arguing " that such investigations are unnecessary in a hospital which mostly receives patients destined for surgery and does not deal with the gamut of intestinal disorder . . ." because

we fully investigate all and every type of disease of the rectum and colon at St. Mark's.

A word on the confusion that appears to exist about what is really meant by the terms "ileocolitis" and "proctosigmoiditis." Mr. Brooke, in his original article, gave the impression that these conditions were entirely separate diseases, something quite on their own and not to be regarded as part of a colitis; they were static and did not spread. This idea is very misleading, for I have clear proof of antiperistaltic spread towards the cæcum. It may take six months or perhaps years, but in some cases it does spread, and in a few it may end in ulceration. The few static cases continue as ordinary examples of simple colitis, perhaps quiescent for a time, then recurring or clearing up under treatment. I can see no reason for regarding these cases of ileocolitis and proctosigmoiditis as separate pathological conditions. They are simply examples of localised or "regional" colitis which may remain localised or spread throughout the bowel as part of a generalised colitis; and I shall continue to recognise and describe those cases as "regional colitis."

London, W.1. NORMAN P. HENDERSON.

SURGICAL TREATMENT OF ANGINA PECTORIS

SIR,—Your annotation of Jan. 30 ends on a gloomy note by suggesting that surgical endeavour has achieved little and that the well-tried cervicothoracic ganglionectomy is the best it can offer in the way of treatment. In this you do less than justice to the work of Professor Arnulf [1] who has carried out his operation in at least twenty-five cases, with no immediate mortality and 80% relief of symptoms.[2] Some of his patients are back at heavy work. Arnulf has a fine colour film of his operation and the anatomical and experimental work behind it, which I was fortunate enough to see in Parma in June, 1953.

Two of my patients illustrate the value of his operation.

A man of 70 was operated on under local analgesia three months ago and was up and walking about the ward on the same day. He can now do much more than before the operation, but gets some pain in the right side of the chest only. This pain disappears in 3 or 4 minutes with rest, whereas before operation it took 20 minutes to go.

The second patient, a man of 50, had been in bed at home or in hospital continuously for 10 months because of the angina which he had when he walked a few paces across a room. He had several severe attacks at rest. The electrocardiograms showed a constant right-branch bundle block. 3 weeks ago an extended Arnulf operation was done, the space between the aorta and pulmonary artery being thoroughly dissected back to the bifurcation of the trachea in order to divide the deep as well as the superficial cardiac plexus. For this a 'Coldlite' retractor with a special handle containing a suction-cooled motor-car headlamp bulb was found very helpful. The result has been dramatic, with complete freedom from anginal pain; indeed the patient can walk up six flights of stairs with no pain whatsoever. He feels that his prospects have been transformed from permanent rest in bed to useful activity, and there is no doubt that this could not have been achieved by any medical measures.

This operation would appear to do all that cord sympathectomy can do and has the advantage of requiring only one incision and one stage. To be anatomically complete, sympathectomy would have to include the first 4 or 5 thoracic ganglia on both sides, and this means two fairly big operations. Moreover, there is some physiological evidence [3] that vagal cardiac fibres maintain a tonic vasoconstriction, and their severance may well improve the coronary circulation. The fact that my first patient's pain now disappears more quickly with rest than before the operation suggests that improved myocardial function has been achieved.

1. Arnulf, G. *J. Chir., Paris*, 1950, **66**, 97.
2. Arnulf, G. Personal communication. 1953.
3. Anrep, G. V., Segall, H. N. *Heart*, 1926, **13**, 239.

While agreeing that further evidence is required, I feel that this modified Arnulf operation offers better prospects than any other treatment for severe angina pectoris and that it merits a careful trial.

Crumpsall Hospital, Manchester. HERBERT HAXTON.

BLOOD DYSCRASIAS ASSOCIATED WITH CHLORAMPHENICOL

SIR,—Few would venture to disagree with the conclusions of Dr. Hodgkinson in his timely review (Feb. 6) of this subject; though his recommendations incline to caution, they are not generally difficult to comply with in this country. However, in overseas countries where typhoid fever is common it is a different matter; for in this disease it is at present considered necessary to administer the antibiotic in relatively heavy total dosage and over a fairly long period in order to reduce the incidence of relapses, which exceeds 20% in many recorded series treated with chloramphenicol.

Attempts to reduce the relapse-rate have usually been along three lines:

(1) Prolonged administration of the antibiotic: courses of 12–18 days or longer, have been advocated and found reasonably effective by Smadel et al.[1] and many subsequent workers.

(2) Repeated short courses have been used by some, successfully by John and Vinayagam,[2] unsuccessfully by Parker [3] and Marmion.[4]

(3) A fairly short course, immediately followed by administration of antityphoid vaccine, has given promising results in small trials.[2 5]

Only the third method permits a total dosage and a length of course well within Dr. Hodgkinson's maxima of 26 g. and 10 days respectively, but unfortunately it does not appear to have been tried on a sufficiently extensive scale for us to be able to assess its efficacy.

My object in writing this letter is to encourage doctors who treat many cases of typhoid fever to give the vaccine method a controlled trial, and to ask those who may already have done so to record their results and conclusions.

Cambridge Military Hospital, Aldershot. D. E. MARMION.

1. Smadel, E., Bailey, C. A., Lewthwaite, R. *Ann. intern. Med.* 1950, **33**, 1.
2. John, A. T., Vinayagam, V. S. *Lancet*, 1952, ii, 757.
3. Parker, M. T. Unpublished work. See *Lancet*, 1950, i, 720.
4. Marmion, D. E. *Trans. R. Soc. trop. Med. Hyg.* 1952, **46**, 619.
5. Nina, C. *Gaz. med. portug.* 1950, **3**, 247.

HYPNOSIS

SIR,—It is interesting to note the comments in your annotation of Jan. 23 about Dr. Kitching's paper at the annual meeting of the British Dental Association. May I correct two errors which, as they stand, alter the emphasis on certain points. Dr. Esdaile is quoted as performing his amazing series of major operations *before* he left for India, whereas these were carried out in India itself. There are grounds for thinking that, in general, the Asiatic temperament is much more susceptible to hypnosis than the more sophisticated European, and the series would have been even more remarkable if carried out in England. Unfortunately Dr. Esdaile died soon after his return, and a comparison of results proved impossible.

Dr. Bramwell was also quoted as sending his patients to *his* junior partner at Leeds. Mr. McAlpine, who carried out the extractions, was a junior partner to two dental surgeons of Leeds and a very young man at the time. This is a significant point because he lacked the prestige value which is so important in hypnosis. The results were, therefore, entirely due to the posthypnotic suggestions of Dr. Bramwell.

A study of the literature associated with hypnosis is very instructive. I feel sure that my medical colleagues who have done this would agree with me that there

has been ample work done by cautious and honest investigators from Braid onwards to justify a full-scale investigation by the medical profession of today. I am convinced that in the limited fields of obstetrics, dentistry, and relaxation for remedial exercises, hypnosis ought to be more widely used. In the broader aspects of medicine, especially psychiatry, its investigation becomes an extremely complex matter, but it should not be shirked.

In dentistry the problem is a comparatively simple one. The dental surgeon has to abolish fear and to increase the proportion of patients who can be brought to the stage of anæsthesia. This needs constant practice of induction technique and, equally important to my mind, education of patients—an aspect which has been greatly hampered by the false impressions created by stage hypnosis.

The dental profession have formed a group to study hypnosis and are endeavouring to found this on as broad a basis as possible, with the help, which we gratefully acknowledge, of medical colleagues experienced in this field. We look forward confidently to a wider medical investigation, and shall always welcome to our meetings any medical practitioners who are interested in the subject, and particularly our anæsthetist colleagues.

E. E. WOOKEY
Chairman, British Society of Dental Hypnotists.

London, W.1.

THERAPY OF DIARRHŒA IN CHOLERA

SIR,—During the cholera epidemic of 1952, in Calcutta, I was impressed by the therapeutic efficiency of the raw juice of *Coleus aromaticus*.[1] But the huge quantities that would be needed if the juice was to be widely used in the next epidemic were not available, so a garden was planted. The products of this garden may not be available in all districts during an epidemic season, and it would therefore be an advantage to have an alternative preparation.

During the latter part of the 1953 epidemic, I tried a very readily obtainable vegetable product—the yellow powder from the common Indian rhizome, turmeric [2–4] or *Curcuma longa* (Sanskrit, *haridra*; Hindi, *haldi*; Bengalee, *halud*). This powder has been used as a condiment and as a toilet agent throughout India from prehistoric times. Its various medicinal properties are said to include the promotion of healing by early production of granulation tissue.[5]

The dried rhizome can be ground into a bright golden-yellow powder, with a mildly bitter taste and a peculiar smell. In the treatment of cholera, gr. 2 of the dry fine powder was given in gelatin capsules. The initial dose was 2 capsules followed by 1 capsule every four hours. The vomiting, if present, was checked with 'Avomine.'[6] The trials of this treatment began in early July, 1953, and continued until September.

The cholera epidemic of 1953 was a peculiar one and was very much more severe and prolonged than that of 1952; and although the peak was over by the end of July, cases continued to come in until mid-October.

The effects of turmeric were studied in 39 patients with clinical cholera, 30 of whom showed cholera vibrios on culture of stools by the three-plate method.[1] Only these 30 vibrio-positive cases are considered here. In 22 of these cases the diarrhœa was checked within seventy-two hours. In the other 8 patients the diarrhœa continued: 4 of them were switched to *Coleus aromaticus* juice and the diarrhœa stopped dramatically. The remaining 4 cases, however, did not respond to continued turmeric therapy: the diarrhœa persisted in 2 patients, who finally died, and convalescence was prolonged in the other 2, who ultimately recovered.

It seems that the juice of *Coleus aromaticus* is better than turmeric for the control of diarrhœa in cholera. Besides, *Coleus aromaticus* was tried at the peak of the epidemic and the proportion of cures was much higher than with turmeric. On the other hand, *Coleus aromaticus* did not free the stools of vibrios, and rough colonies were seen even as late as the seventeenth day of observation. The turmeric patients gave negative stool cultures by the eighth or ninth day in the 22 cases of clinical cure. But the results are not exactly comparable because coleus therapy was tested during the peak of the epidemic while turmeric was tried only at the end.

In vitro, we found that coleus juice had no bacteriolytic properties and was only mildly bacteriostatic. Turmeric was both bacteriolytic and bacteriostatic to a mild degree; but these properties were insufficient, we thought, to account for its observed beneficial effects in such a severe condition as cholera.

Chittaranjan Hospital, Calcutta. HEMENDRA NATH CHATTERJEE.

1. Chatterjee, H. N. *Lancet*, 1953, ii, 1045.
2. Dymock, W. Pharmacographia Indica. Calcutta, 1893; vol. iii, p. 407.
3. Kirtikar, K. R., Basu, B. D. Indian Medicinal Plants. Calcutta, 1918; vol. ii, p. 1250.
4. Mukerji, B. Indian Pharmaceutical Codex. New Delhi, 1953; vol. i, p. 87.
5. Gujral, M. L., Chowdhury, N. K., Saxena, P. N. *J. Ind. med. Ass.* 1953, 22, 273.
6. Chatterjee, H. N. *Lancet*, 1953, ii, 1063.

VITREOUS OPACITIES

SIR,—One reads accounts of researches into nearly all the ills to which the flesh is heir; but so far no-one seems to have been able to produce any relief for sufferers from vitreous opacities, or "floaters" as the oculists call them.

I have been myopic for as long as I can remember, and for many years now have been troubled by vitreous opacities. I have consulted several oculists with the same result: in plain English "grin and bear them." One friend told me that he had had them for twenty years; he regarded them as physiological, and was able to ignore them. In the same breath he stated that he always looked for septic foci, especially carious teeth, and on the strength of that I had some very useful old teeth removed, with no result beyond a fresh crop of "floaters," and a great deal of discomfort from a lower denture.

I am quite sure that there must be a great many people besides myself who would welcome some means of improving this "physiological" but very tiresome condition, and I commend the problem to the inquiring minds of the day.

Pietermaritzburg, Natal, South Africa. GEOFFREY DUNDERDALE.

POLYMYXIN B

SIR,—Dr. McGill and Dr. Mendel quote (Dec. 19) my work in what I believe to be a misleading fashion. Describing the use of polymyxin B in bacterial meningitis, they say that "its injection intrathecally has been very recently said to be harmless (Jawetz 1952, *British Medical Journal* 1953)." I believe that such a statement is not meaningful unless the dose recommended by a previous worker is stated. We have never employed a dose in excess of 10 mg. of polymyxin B daily intrathecally. The official recommendation of the American Medical Association's Council on Pharmacy and Chemistry, as well as that of Burroughs Wellcome & Co., reads as follows: "Children over two years and adults, 5 mg. daily for 3 or 4 days, then 5 mg. every other day."

Had the authors used this schedule it seems very improbable that they would have encountered a significant meningeal reaction. However, they injected 30 mg. of the drug in the first twenty-four hours of treatment, which is far in excess of the recommended dose. When used in unduly high dose, or concentration, many drugs are, of course, known to produce meningeal irritation and perhaps arachnoiditis.

School of Medicine, University of California. ERNEST JAWETZ.

THE THIRD FONTANELLE

SIR,—In their article last week, Dr. Hoyle and Dr. Franklin kindly say that we were the first to refer in print to the association of the third fontanelle in the newborn with mongolism. We wish, however, to make it clear that we were not announcing a new discovery. We listed the third fontanelle as one of the signs which we had found useful in diagnosis. Dr. Reginald Lightwood has taught for more than a decade that this fontanelle is commonly present in newborn mongols.

The Hospital for Sick Children, London, W.C.1. CEDRIC CARTER
DERMOD MACCARTHY.

TOXÆMIAS OF PREGNANCY

SIR,—Last week you were good enough to review my book on this subject. I should like your readers to know that it was impossible for me, when confined to a book of this size, to develop my arguments fully. Nevertheless, the important points of my case have been collected over a period of several years, and they have been submitted for criticism in the medical press and at various conferences.

You are doubtful about my assertion that recovery by the use of conduction anæsthesia is invariably dramatic and certain; I must point out that this was definitely the view of speakers at the Congress of Anæsthetists in London in 1951.

The aim of my book was to direct attention to renal ischæmia as a cause of anuria and toxæmia; and in both these conditions the effects of ischæmia are now being confirmed.

London, W.1. JOHN SOPHIAN.

THE LIFE OF THE SHAWL

SIR,—The vagaries of genius may often be justly dubbed neurotic; but in the context of genius the "diagnosis" will as often be irrelevant. Studies such as Dr. Hubble's on Charles Darwin add to our appreciation of great achievement. However, *securus judicat orbis terrarum*: and the doctor, not the patient, is likely to be up for judgment if "neurotic" is used pejoratively of the world's great men. Dr. Hubble seems personally to disclaim such a usage in his letter of Feb. 27: but he might perhaps, without unseemly emotional laxity, allow himself a little pride in Darwin's achievements, while properly eschewing the more purely family sentiments he mentions.

The Radcliffe Infirmary, Oxford. C. W. M. WHITTY.

ORDINARY YOUTHS

SIR,—I doubt the welcome Dr. Logan and Miss Goldberg will accord their champion, Dr. Malleson, who, in his letter last week, so depreciates their statistical industry. In their article,[1] there are 8 tables; under 6 of them there are statements about the statistical correlations between such factors as broken homes and mental health, and growth and pubic hair. And yet Dr. Malleson writes that "the data of sociology are often too ill-defined for statistical handling, and one is confined to general description and admittedly subjective appraisal . . ." and that "the study of Dr. Logan and Miss Goldberg nowhere claims to do more than this."

What is of more concern is that neither the authors nor Dr. Malleson nor Dr. Morris (Feb. 27) have seen fit to comment on the sentence I quoted from the article; a sentence which implied that there was evidence that uninhibited premarital sexual intercourse would be beneficial to the mental health of young people. Where is the evidence for this extraordinary "extrapolation"?

This, I would remind Dr. Malleson, is not a matter of opinion. We are asked to accept a statement based on evidence which is not disclosed. John Knox? I should have thought of David Hume, myself; he dealt in logic.

A. STEWART HENDERSON
Medical Officer to Student Health Service, University of Glasgow.

SIR,—I am quoted by Dr. Logan and Miss Goldberg as having found multiple defects, largely postural, requiring treatment. On the contrary, I said that many mild postural defects seemed to be physiological effects of rapid growth, and few were referred for treatment. I also noted the good physical condition of most of the youngsters.

Some of my other findings are widely at variance with those of Dr. Logan and Miss Goldberg, particularly as regards psychological disorder. Their findings are certainly sensational, but they seem to have drawn conclusions from a small and rather unusual group.

Farnham Royal, Buckinghamshire. M. E. M. HERFORD.

1. *Brit. J. Sociol.* 1953, **4**, 323.

Medicine and the Law

Jury's View of Nature Cure

AT a fatal-accidents inquiry,[1] held in Edinburgh on Feb. 11, into the death of a three-year-old boy, Professor Douglas Kerr, professor of forensic medicine at Edinburgh University, described the failure to obtain medical help as "criminal." The child, he said, had died as a result of lack of proper attention. The post-mortem examination had revealed an infection of the middle ear, which had extended into the skull; the whole body showed toxic changes and there had been thrombosis. The child's father stated that the boy, a week before his death, had a swollen ear from which there was a discharge. On the advice of the Kingston nature-cure clinic, cold compresses were applied. Visits were paid by Miss Hammerton and Mr. A. Milne, both from the clinic; they recommended the continuance of the "nature cure." On the day of his death, the boy appeared to be in a convulsive fit. An ambulance was summoned; meanwhile, his father tried to restore breathing by immersing the boy under a cold tap and then by artificial respiration, but he died before the ambulance arrived.

Miss Hammerton, aged 21, said she was training at the Kingston clinic as a naturopath, under Mr. J. C. Thomson, the principal; she had completed 3½ years of a 5-year course and was taking patients under supervision. Asked by the sheriff if she had not thought it time the child was seen by a doctor, she replied that they felt the condition was being handled in the best possible way. In answer to the procurator-fiscal, she said she did not believe in doctors generally. Mr. Milne, aged 32, described himself as a naturopath and a graduate of the Edinburgh School of Nature Therapeutics, Kingston. In his opinion the treatment was proper. It was essentially leaving the child alone in the sense of allowing it to tackle the situation as best it could. He thought the boy was "made of poor quality material." To have called a doctor would have made no difference. The child's grandmother said she had every confidence that, if nature-cure had not pulled the boy through, the medical profession could not have saved his life. Mr. James Thomson, principal of the clinic, testified that until this case the clinic had been 100% successful, and in 41 years there had been no death. He did not agree that the wrong treatment had been recommended. The jury, under the sheriff's direction recorded their opinion that "it should have been obvious to all who saw the child during the week before his death that his condition was dangerous, and the failure of those responsible for the care of the child to call for qualified medical assistance was gross neglect."

1. *Glasgow Herald*, Feb. 11, 1954.

As is pointed out by the sheriff, this finding shows the proper authorities the view taken of the evidence. Of itself it has no civil or criminal consequences. It may be added that the child's father obviously had faith in the nature cure applied by the Kingston clinic, and that, though the use of the impressive word "clinic" may by some be thought tendentious, there was no question here of an unregistered practitioner pretending to be duly qualified. There is, of course, in such cases a possible issue whether the parent, being liable to maintain a child, has failed to provide medical aid for him within the terms of section 12 of the Children and Young Persons (Scotland) Act, 1937. On this issue no comment is permissible.

Parliament

Medical Auxiliaries

IN the Commons on Feb. 23, Mr. A. L. BIENKINSOP moved that the National Health Service (Medical Auxiliaries) Regulations, 1954, be annulled. The regulations arose out of the recommendation of the Cope Committee, that registration machinery, entirely separate from the Ministry of Health, should be set up for these auxiliaries, but it had proved impossible to get agreement among the organisations concerned. In the absence of this registration machinery hospital authorities had for the past three years made new appointments broadly on the qualifications suggested by the Cope Committee. The regulations now made the Minister the arbiter of standards and qualifications. He assumed that the Minister intended to replace these regulations later with more permanent provisions. They were hoping to secure agreement among the professional bodies to set up registration machinery.

Sir FREDERICK MESSER, in seconding the motion, agreed that recognition of the medical auxiliaries was long overdue, but he realised that it was impossible at present to get registration machinery such as the General Medical Council, the General Nursing Council, and the Pharmaceutical Society. It was necessary to be careful about the standard of attainment of medical auxiliaries, for they came into actual contact with the patients and had a tremendous responsibility. If the Minister's action induced these organisations to get together and form a council which could be a registering body good would result.

Mr. IAIN MACLEOD, the Minister of Health, admitted that he regarded the present procedure as unsatisfactory, but thought it the least undesirable of the courses open to him. The regulations made it illegal for any body or committee of a hospital or local health authority to employ an auxiliary who was not qualified in accordance with the regulations. The regulations differed from the Cope recommendations by excluding almoners and by including remedial gymnasts. Because a body was included in schedule 2 of the regulations, it did not necessarily mean that he approved of its syllabus, and he intended to invite his advisers to examine the courses and examinations of representative training schools.

He agreed that it was undesirable that this sort of thing should be done by regulation, but that was better than the present procedure by circular. He was glad of the opportunity to make it clear that this must be a temporary measure. He had not given up hope that some of these bodies would eventually come together and achieve statutory registration. He was setting up a working party to try to find a successful solution. It was his aim to bring the position of medical auxiliaries into line with the other professions in the National Health Service. In considering standards he would first be guided by the findings of the Cope Committee and would then act upon the very best advice available to him. The motion was by leave withdrawn.

Civil Estimates

According to the Vote on Account for 1954–55, which was presented to Parliament on Feb. 25, the civil estimates will be £2432 million compared with £2388 last year. Expenditure on the National Health Service is estimated at £433 million, an increase of £13 million over last year. The Medical Research Council is to receive £1,947,000, as against £1,806,000 in 1953–54.

QUESTION TIME

World Conference on Cardiology

In the House of Lords, replying to a question, Lord HAWKE said that after full consideration the Treasury had allowed currency for the full number of delegates, namely 32, applied for by the British Cardiac Society to attend the World Conference on Cardiology in Washington during September.

N.H.S. Charges

Mr. BLENKINSOP asked the Minister of Pensions and National Insurance what was the cost to the National Assistance Board in 1953 of meeting claims for reimbursement of National Health Service charges.—Mr. OSBERT PEAKE replied: It is estimated that assistance granted for these charges during 1953 amounted to about £1,060,000, of which prescription charges accounted for about £445,000 and dental charges about £235,000.

Occupational Centres for Backward Children

Replying to questions, Miss P. M. HORNSBY-SMITH said that 37 health authorities in England and Wales had not provided occupation centres for backward children. Local-health authorities were not bound to provide centres and these were not the only means of providing training.

Of 146 local-health authorities in England and Wales the following had indicated in their returns that at Dec. 31, 1953, no training at an occupational centre or at home was provided in their area for mental defectives: counties of Anglesey, Brecon, Caernarvon, Cardigan, Cornwall, Denbigh, Flint, Merioneth, Montgomery, Pembroke, Radnor, Rutland; Isles of Scilly; county boroughs of Barrow-in-Furness, Merthyr Tydfil, South Shields, Tynemouth, and Worcester. Most of these were small or rural areas where there were often few, if any, defectives who might benefit.

Infant Mortality

Replying to a question, Miss HORNSBY-SMITH said that the provisional infant-mortality rate for England and Wales in 1953 was 27 per 1000 related live births.

School Dental Service

Replying to a question, Miss FLORENCE HORSBRUGH, Minister of Education, said that there was the equivalent of 928 full-time dentists working in the school dental service in October, 1953, compared with the equivalent of 827 in October, 1952. This figure was the highest yet reached, but because of the increase in the school-roll the equivalent of over 1000 additional full-time officers would still be needed to give a ratio of 1 dentist to 3000 children for the present school population.

Pay-beds

Mr. SOMERVILLE HASTINGS asked the Minister of Health whether he would give directions that a quarterly or monthly report be presented to each regional board and board of governors of a teaching hospital showing the percentage of section-v pay-beds in use by paying and non-paying patients respectively.—Miss HORNSBY-SMITH replied: It is for boards themselves to decide how best to discharge their responsibility for ensuring that these beds are fully used.

Births, Marriages, and Deaths

BIRTHS

BINNS.—On Feb. 18, at Queen Charlotte's Hospital, London, W.6, to Mary (née MacGillivray), wife of T. B. Binns, M.R.C.P. —a son.

GORDON.—On Feb. 20, at 27, Arlington Drive, Ruislip, Middlesex, to Valerie, wife of Dr. Neil Gordon, M.R.C.P.—a son (Keith Gray).

Obituary

THEO JENNER HOOPER HOSKIN

M.D. Camb., F.R.C.P.

Dr. T. Jenner Hoskin, who died on Feb. 27, had been senior physician of the Royal Free Hospital for some sixteen years, and for the last year he was also chairman of the medical committee. He had taken a great part in the life of the hospital; and the hospital had been a great part of his own life.

He was born in 1888, the son of Dr. Theophilus Hoskin, J.P., who practised in Hackney. In 1903 he went to Charterhouse, and in 1907 to Trinity College, Cambridge. After qualifying in 1914 from the Middlesex Hospital he held house-appointments there till he joined the R.A.M.C. in 1915. During the next four years he served in Gallipoli, Egypt, German East Africa, and Sierra Leone, and he was mentioned in despatches.

[Elliott & Fry

After demobilisation he was appointed a clinical assistant at The Hospital for Sick Children, Great Ormond Street, and the same year he joined the staff of Queen Mary's Hospital for the East End. Two years later he also accepted clinical assistantships at the National Hospital for Diseases of the Heart, and at the West London Hospital. His interest in cardiology was already recognised, and a year or so later he was appointed to the staff of the Royal Free Hospital and soon was given charge of the cardiographic department. About this time he also joined the staffs of St. Paul's Hospital for Genito-urinary Diseases, and the Royal National Ear, Nose, and Throat Hospital.

In 1933 he was elected F.R.C.P., and at the time of his death he was serving the college as a counsellor. This recognition from his colleagues, like his chairmanship of the Royal Free medical board, he greatly appreciated. In 1948 he was elected president of the Medical Society of London. He was the medical officer of several important insurance companies, and he also had links with the City as a liveryman of the Skinners' Company and as a past master of the Worshipful Company of Makers of Playing Cards.

F. P. L. L. writes:

"Jenner made his world in the Royal Free Hospital and his private practice. He was a careful teacher who did not spare himself in the service of his students. One of the most punctual of men, he would not miss a round or outpatients on any account except ill health. He played a great part in the social activities of the hospital and medical school, and he gave a silver cup for lawn-tennis for competition between the resident medical staff of the hospital and the nurses.

"In all the 20 years I knew him I never saw him anything but cheerful. Even in the early days of the war, when all appeared to be falling around us in ruins, he still maintained a schoolboy humour and took an impish delight in pulling his colleagues' legs. But he could be serious if any of his hallowed monuments were attacked. The public schools, the universities, medicine—all were sacrosanct. His intensity of feeling was such that when the honorary status of physicians was abolished, he accepted service but refused payment.

"Jenner reminded me in many ways of Don Quixote: impetuous, chivalrous, warm-hearted, with a shrewd brain concealed behind a brusque manner, he was extraordinarily sensitive to criticism and would occasionally take offence where none was meant. But his belief in the old-fashioned loyalties and virtues, in punctuality and professional integrity, made him a colleague with whom it was always a happiness to work."

Dr. Hoskin married Mary Jane Finlay Stewart, of Skelmorlie, Ayrshire, who survives him with a son and two daughters.

A memorial service is to be held at 12.30 P.M. on Thursday, March 11, in Holy Trinity Church, Marylebone Road, N.W.1.

FREDERICK ROBERT SELBIE

M.A., M.D. Aberd., D.Sc., Ph.D. Lond.

THE larger part of Professor Selbie's too short career was given to research. From the period he spent, some twenty-five years ago, in the laboratories of the Pasteur Institute in Paris till he finished his work in the laboratories of the Bland-Sutton Institute last month, he was engrossed in the problems of the virus and bacterial diseases, and later in the development of chemotherapy and the antibiotics.

He was educated at Gordon's College and the University of Aberdeen, where as a brilliant student he carried off the gold medal for anatomy and the Alexander Anderson scholarship. In 1928 he graduated as M.B. with first-class honours and was duly appointed house-physician to the professor of medicine. And this, as J. W. H. recalls, was not an easy post to fill.

"The Professor was precise, indeed almost fussy, and Sister had been there for long enough to know how much even the best-qualified resident had still to learn. Selbie entered a ward in which a resident had to know his place and in which students had to find theirs in a hurry. In this, Selbie was most helpful to them. He quietly told those who could be told what was acceptable and what was not, and he did so in such a reasonable and friendly way that he was obviously a reliable guide.

"Selbie was a man of medium size; he wore a very long white coat and a gravely anxious expression during clinics and ward rounds; but afterwards he would often show his humanity in a quietly humorous comment of a few words. Residents in hospitals were less numerous then than they are now, and Selbie's duties additional to those of his medical ward included giving anæsthetics at surgical emergency operations, looking after the V.D. wards and clinic, and attending to medical casualties on receiving days. Inevitably he was often asked to be in more than one place at a time, and to deal with this problem he would sometimes ask a willing student to look after a situation for him until he could attend to it in person. He would ask this kind of help with a courtesy which I still remember, and he would always offer as a general indication of policy the advice to 'keep things quiet.'"

Selbie first came to London to work as a scientific assistant at the Imperial Cancer Research Fund, when he studied both induced and transplanted tumours. In 1936 he moved to the Middlesex Hospital where, with James McIntosh, he continued his virus work and began his studies in chemotherapy. From then on much of his life was spent with that formidable Aberdonian, who came to rely implicitly on his judgment and was always prepared to listen respectfully to his views. Indeed Selbie often played a helpful part in explaining McIntosh's ways to those who did not know him well. In 1939 he was appointed assistant pathologist at the Bland-Sutton Institute, and during the war he and McIntosh undertook, on behalf of the War Wounds Committee of the Medical Research Council, a series of investigations on the chemotherapy of wound infections, some of which were published in our columns.

After the war Selbie was given charge of the department of bacteriology, and here his gift for teaching was soon recognised by his colleagues and his students. When a readership in bacteriology was set up in 1947, he was the first to hold the post. Two years later the University of London conferred on him the title of professor.

Conscientious, able, and kind, Selbie was inevitably called to many committee tables. He had been secretary and president of the pathology section of the Royal Society of Medicine; for four years he was secretary of the Board of Studies in pathology and an examiner in pathology for the final degree; he had been editor of the *British Journal of Experimental Pathology* and assistant editor of the *British Journal of Cancer*; and he was a vice-president of the Royal Microscopical Society. He died on Feb. 22 at the age of 49.

R. W. S. writes: "Selbie's death so early in a distinguished career has come as a shock to his colleagues and

to his friends. Apart from his eminence as a bacteriologist and research-worker he will long be remembered for his warm kindliness and the readiness with which he would help others with their problems. He bore his distinctions with unassuming modesty and would make shrewd thrusts at the expense of those who made claims which to him seem unwarranted. Outside his own subject he read widely, and his sympathetic nature made him an excellent companion in his work, socially, and at golf which he so greatly enjoyed."

In paying tribute to Selbie, J. W. H. returns to his memories of student days. "The advice, to keep things quiet, which Selbie gave to us as students was essentially his attitude. He kept quiet about all sorts of things. He quietly transferred his interest in spirochætes from the wards to Levaditi's laboratory at the Pasteur Institute. He wrote an M.D. thesis on some excellent observations on *Streptobacillus moniliformis*, and for this he was quietly and inevitably awarded the highest honours. He remained a quiet man whose character was respected and whose personality was liked even by those who, like many of us, could not claim to know it well. In recent years he was interested in the causal agents of various forms of sheep dermatitis. For this work I sent him material from time to time and always in return he provided the fullest information about what he found and readily disclosed not only his unpublished observations but his most private thoughts and speculations. In this, as in everything, he was essentially generous. He trusted people as he expected them to trust him; and if he did little to reveal himself unasked he was always willing for a real exchange of personalities if this was obviously desired. He could laugh when his guesses went wrong and he was good at predicting when this would happen to himself and to others. It is a sad loss that he should now so suddenly and quietly slip away from our scene."

KENELM HUTCHINSON DIGBY

O.B.E., M.B. Lond., F.R.C.S.

Prof. Kenelm Digby, who retired from the chair of surgery in the University of Hong-Kong in 1950, died in London on Feb. 23 at the age of 69.

He was born at Ealing, the son of the late William Digby, C.I.E. As a student at Guy's Hospital he won the Michael Harris, Hilton, and Beaney prizes, and after qualifying in 1907 he held house posts there, and in 1909 he was appointed surgical registrar and anæsthetist. The following year he took the F.R.C.S. In 1912 he was appointed principal medical officer to the Great Central Railway, but he soon felt the call of the East, and in 1913 he went out to Hong-Kong as professor of anatomy in the university. There he made his home, and ten years later he became professor of surgery in the university, having been appointed Ho Tung professor in clinical surgery in 1915. He was also consultant in surgery to the government of Hong-Kong. He won for himself an enviable reputation, not only as a careful surgeon, but as a kindly mentor to the generations of medical students and housemen who learned at his feet.

At the outbreak of the Pacific War, Digby was in charge of casualties and emergencies at the Queen Mary Casualty Clearing Hospital of some 800 beds. This was the leading hospital dealing with wounded civilians, but many wounded from the Services and Volunteer Force in Hong-Kong were admitted during the eighteen days of aerial bombardment and point-blank shelling by the Japanese which followed the outbreak of the Pacific War in December, 1951. After the surrender, the Japanese military authorities, who were well aware of Digby's high reputation, invited him to stay out of internment, and sought his coöperation. Digby steadfastly refused and courageously insisted on going into internment in Stanley civilian internment camp. He maintained his courage and integrity against severe Japanese pressure throughout nearly four years of internment. He never spared himself as senior surgeon to the improvised camp hospital, and he contributed a great deal to the morale of that camp of 3000 people from many nations and from all ranks of life. The privations which he and others suffered—there were several hundred cases of beriberi among the internees, apart from other deficiency and disabling diseases—took toll of his health and strength.

After the liberation of Hong-Kong in 1945, Digby spent a short convalescence in England and then returned to Hong-Kong. Later he retired from his chair and was appointed emeritus professor of surgery. In 1949, in failing health, he returned to England to do research work at the Royal College of Surgeons, where his studies included the rôle of the subepithelial lymphatic glands in immune reactions.

He leaves a widow and two daughters.

EUGENE WOLFF

M.B. Lond., F.R.C.S.

Mr. Wolff, ophthalmic surgeon to the Royal Northern Hospital and surgeon to Moorfields, Westminster, and the Central Eye Hospital, died in London on Feb. 25.

He was born in 1896 at Oudtshoorn, South Africa, but he received some of his schooling at University College School, London, and his medical training at University College and University College Hospital. In 1918, after graduating M.B., he served as a captain in the South African Medical Corps, but in the following year he returned to University College where he acted as part-time demonstrator in anatomy till 1930. During those years he continued his training as an ophthalmic surgeon at University College Hospital and at Moorfields Eye Hospital, ultimately serving as ophthalmic registrar at U.C.H. and as chief clinical assistant at Moorfields. He took the F.R.C.S. in 1927, and shortly afterwards was appointed to the staff of the Metropolitan Hospital, the Albert Dock Hospital, and the Royal Northern Hospital. He was also appointed pathologist to the Royal Westminster Ophthalmic Hospital, where he was elected assistant surgeon in 1936. Henceforth his energies were mainly devoted to that institution, and for some years also to the London Jewish Hospital.

As an ophthalmic surgeon Wolff occupied a distinctive place, for in addition to his clinical interest he was an expert anatomist and ophthalmic pathologist, following in both these activities his teachers Percy Flemming and John Herbert Fisher. As an anatomist he taught at the Slade School, and his *Anatomy for Artists* is now in its third edition. His *Shorter Anatomy* was also written in the '20s. Later, when his interests were more strictly ophthalmological, he brought out in rapid succession the *Anatomy of the Eye and Orbit* (1933), a *Pathology of the Eye* (1934), and *Diseases of the Eye* (1937). All these books were beautifully illustrated with his own drawings.

Wolff wrote a number of careful and competent papers, many dealing with histology, some on diagnosis, and others on operations. But his outstanding contributions were pathological studies on siderosis bulbi in 1934, and (jointly with F. Davies) on papillœdema in 1931. More lately he has published studies on melanotic tumours, Coats's disease, and retrolental fibroplasia. In 1945 he was elected a vice-president of the Ophthalmological Society of the United Kingdom, and he was also an honorary member of the ophthalmological societies of Belgium and of Greece.

P. McG. M. writes: "Those who knew Eugene Wolff well realised that behind a rather retiring manner there was a man of sterling quality and high intellectual calibre. A first-class clinician and a great teacher, his lectures and demonstrations were always well attended and he usually had a retinue of postgraduate students attending his clinics. He was often to be found in the laboratory, examining and preparing specimens, eager always to demonstrate something interesting or unusual to any of his colleagues who happened to be about. What he had to show was always worth seeing. He was interested in art—sculpture perhaps more than drawing—and the illustrations in his books are proof of his artistic sense. He was also fond of music, and his immense command of the literature of ophthalmology had been widened by his knowledge of French and German.

This rare and gifted man was never too busy to listen or to give of his knowledge and experience to anyone who asked; yet few men can have worked so hard in their time as he did. His outstanding qualities were his geniality and modesty, his enthusiasm and indefatigable industry, and his thoughtfulness for others."

He married in 1923 Lydia Abravanel, a member of a distinguished Sefardi family. She survives him with a daughter of the marriage.

Professor CATHCART

Lord Boyd-Orr writes:

"Professor Cathcart was almost the last of the small but brilliant group of the British physiologists of the pre-vitamin period when research in physiological chemistry was confined mainly to energy exchange and protein metabolism. In spite of recent advances, these subjects are still the fundamental basis of nutrition, and in both of them Cathcart was a leading authority with an international reputation.

"Besides being a scientist of the first rank, he was a man of wide culture, deeply interested in philosophy, literature, and art as well as in other branches of science, especially psychology. My most enduring and pleasant memories of his research laboratories are the occasions when the tedious chemical analytical work was enlivened by discussions on these wider fields of research and speculation. I can still remember some of the views expressed by the Chief and those who came to work in his laboratories, including Dr. Gertrude Bostock, a scientist and philosopher of no mean order. It was fitting that Cathcart and she, two kindred souls, should get married.

"If I might add a personal note, he was the man who had the greatest influence in shaping my life. He introduced me to research, a line I had never contemplated, and while I was still a very junior person, who had published only two rather unimportant papers, he insisted on my going, rather reluctantly, to start what became the Rowett Research Institute in Aberdeen. Indeed the institute should be regarded as an offshoot of the physiology department of Glasgow University, and until he resigned I regarded that department as a sort of spiritual home to which I could return for advice and encouragement.

"To me and to many others it is a melancholy thought that the tall lithe figure with the dark hair and bright blue eyes, and the rather stern face which broke into the most beautiful smile, and the spontaneous boyish laughter in the talks and discussions he loved, now belong to memory."

Appointments

BELL, MARGARET M., B.A., M.B. Dubl., D.C.H.: asst. M.O., health department, Kingston upon Hull.

GIBBS, A. E., M.A., M.B. Camb.: S.M.O. (asst. physician in geriatrics), St. Leonard's and Walnuttree hospitals, Sudbury.

GORDON, E. H., M.D. Belf., D.P.H.: deputy M.O.H. and deputy school M.O., Norwich.

KELLY, J. F., M.B. N.U.I.: asst. M.O.H. and school M.O., Ipswich.

MCCAFFREY, Margaret T., M.B. N.U.I., D.C.H., D.P.H.: asst. M.O.H. and asst. school M.O., Bolton.

REGHERS, A. W., M.D. Louvain, D.M.R.T.: asst. radiotherapist (S.H.M.O.), St. George's Hospital, London.

SIMPSON, R. G., M.D. Aberd., M.R.C.P.: physician (consultant) in geriatrics and general medicine, Perthshire area.

STOVIN, SYBILLE, E., M.B. Lond.: lecturer in bacteriology and hon. asst. bacteriologist, Royal Free Hospital teaching group, London.

WILKINSON, MARCIA I., M.A., B.M. Oxfd, M.R.C.P.: part-time neurologist (consultant), neurology section, Elizabeth Garrett Anderson Hospital, London.

West Riding of Yorkshire:

HARRIS, C., M.B.: asst. county M.O. and school M.O. at Barnoldswick, Earby, Silsden and Skipton urban district, and Skipton rural district.

ROBERTSHAW, NANCY M. E., M.B., B.SC. St. And., D.OBST.: asst. county M.O. and school M.O., Bowland, Settle and Sedbergh rural districts.

STONEHOUSE, W. P. B., M.A. Camb., M.R.C.S., D.P.H.: senior asst. county M.O. and school M.O., Colne Valley, Denby Dale, Holmfirth, Kirkburton, Meltham and Saddleworth urban district councils.

North East Metropolitan Regional Hospital Board:

DUNHAM, W. F., B.M. Oxfd, D.PHYS.MED.: part-time physician in physical medicine (consultant), Vale Road School spastic unit, Tottenham Hospital.

FAIRBURN, BERNARD, M.B. Lond., F.R.C.S.: part-time neurosurgeon (consultant), Oldchurch Hospital.

LITTLEJOHN, JAMES, M.B.E., M.R.C.S., D.L.O.: part-time E.N.T. surgeon (consultant), Chelmsford and Essex and St. John's hospitals, Chelmsford.

North-Eastern Regional Hospital Board, Scotland:

ANDERSON, C. J. B., M.B. Aberd., F.R.C.S.E.: consultant surgeon, Shetland Islands.

BENNETT, FIONA M., M.B. Edin., D.O.: asst. ophthalmologist, Aberdeen General hospitals.

CARR, T. L., M.B. Aberd., F.R.C.S.: consultant orthopædic surgeon, regional orthopædic surgery unit.

Welsh Regional Hospital Board:

BEASLEY, W. H., M.B. Wales: asst. pathologist (S.H.M.O.), Newport and East Monmouthshire H.M.C.

COCKS, D. P., M.D. Lond., M.R.C.O.G.: consultant obstetrician and gynæcologist, Mid-Glamorgan H.M.C.

ROSSER, T. H. L., M.B. Wales, F.R.C.S.: consultant thoracic surgeon, Newport and East Monmouthshire H.M.C.

SCHOFIELD, A. L., M.B. Glasg., F.R.C.S.E.: consultant plastic surgeon, St. Lawrence Hospital, Chepstow.

Diary of the Week

MARCH 7 TO 13

Monday, 8th

UNIVERSITY OF LONDON
4.45 P.M. (University College, Gower Street, W.C.1.) Prof. F. Lynen (Munich): Participation of Co-enzyme A in Metabolism of Fat.

INSTITUTE OF CARDIOLOGY, National Heart Hospital, Westmoreland Street, W.1
9.30 A.M. Dr. Maurice Sokolow (California): Treatment of Malignant Hypertension.

INSTITUTE OF NEUROLOGY, The National Hospital, Queen Square, W.C.1
5 P.M. Dr. W. R. Bett: Preparation and Writing of Papers for the Medical Journals.

Tuesday, 9th

UNIVERSITY OF LONDON
5 P.M. (University College Hospital Medical School, University Street, W.C.1.) Prof. J. Dankmeijer (Leiden): Early Differentiation of Nasal and Buccal Cavities in Relation to Tooth Development.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
4.30 P.M. *Section of Experimental Medicine and Therapeutics.* Prof. G. A. H. Buttle: Pharmacology and Experimental Medicine. (Presidential address.)
8 P.M. *Section of Psychiatry.* Dr. E. A. Bennet, Dr. F. O'Donnell Finigan, Dr. C. Anthony Storr: Analytical Psychology.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. P. J. Hare: Xanthoma, Necrobiosis Lipoidica, and Granuloma Annulare.

CHELSEA CLINICAL SOCIETY
7.30 P.M. (South Kensington Hotel, 41, Queen's Gate Terrace, S.W.7.) Captain C. J. T. Dean: The Royal Hospital and the Chelsea Pensioners.

MANCHESTER MEDICAL SOCIETY
5 P.M. (Medical School, University of Manchester.) *Section of Surgery.* Dr. E. C. Easson, Dr. H. C. Warrington: Isotopes—Their Nature, and Use in Surgery.

Wednesday, 10th

UNIVERSITY OF LONDON
5.15 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Prof. E. A. Müller (Dortmund): Man at Work—A Physiological Analysis. (First of three lectures.)

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Section of Physical Medicine.* Dr. F. S. Cooksey, Mr. E. S. Evans, Group-Captain C. J. S. O'Malley: Social Adjustment of Physically Handicapped.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3.30 P.M. Sir Cecil Wakeley, P.R.C.S.: Health of a Nation.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Treatment of Mycotic Diseases.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
6 P.M. Prof. Gösta Dohlman (Lund): Mechanism of Vestibular Fistula Reaction.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Section of Pathology.* Dr. S. Muldal: Cytological Aspects of Malignant Tumours.

Thursday, 11th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. F. W. Holdsworth: Traumatic Paraplegia. (Hunterian lecture.)

UNIVERSITY OF LONDON
5.15 P.M. (London School of Hygiene and Tropical Medicine.) Professor Müller: Man at Work—A Physiological Analysis. (Second of three lectures.)

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Lieut.-Colonel P. Cuddon: History of Provision for Army Pensioners.

INSTITUTE OF CHILD HEALTH, The Hospital for Sick Children, Great Ormond Street, W.C.1
5.30 P.M. Dr. D. A. Pond: E.E.G. in Neuropsychiatry of Childhood.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Animal Parasites of the Skin.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY
5 P.M. Prof. F. C. Ormerod: Types of Deafness.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Dr. R. R. Bomford: General Physician Looks at Psychosomatic Medicine.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Hospital, Oxford
8.30 P.M. Mr. H. Osmond-Clarke: Cervical Spondylosis.

Friday, 12th

UNIVERSITY OF LONDON
5.15 P.M. (London School of Hygiene and Tropical Medicine.) Professor Müller: Man at Work—a Physiological Analysis. (Last of three lectures.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Mr. Norman Tanner: Definitive Surgery for Peptic Ulcer.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Hare: Xanthoma, Necrobiosis Lipoidica, and Granuloma Annulare.

Saturday, 13th

MIDLAND TUBERCULOSIS SOCIETY
3 P.M. (Birmingham Chest Clinic, 151, Great Charles Street, Birmingham, 3.) Dr. J. Pepys: Relationship of Non-specific and Specific Factors in Tuberculin Reaction.

Notes and News

ADOPTION AND HEREDITY

THE gulf between pure and applied science is inevitably still wide. The report [1] of a conference held last July by the societies registered for adoption shows Prof. L. S. Penrose, F.R.S., standing upon one brink, and striving gallantly to catch at ropes thrown to him from the other side. His short clear account of what we know of the genes and their potentialities had fallen on the all-too-acute ears of those who have to cope daily with the complex and astounding patterns which genes and environment contrive between them; and their questions showed their intense wish to build a bridge, however fragile, from his cliff to theirs. Could couples intending to marry, he was asked, be warned that, owing to the chemical composition of their genes, they were likely to produce children with defects, and if so could that be changed by chemical treatment? Professor Penrose had to admit that, except in very rare cases, it would be impossible to predict what the children would be like. As to therapy for altering the genes for the better, that is a remote possibility which may be achieved in two or three hundred years' time. Is it possible, another speaker inquired, to give any information about the inheritance of temperament? But prediction of temperament, Professor Penrose confessed, is even more uncertain than prediction of intelligence: even identical twins tend to be less alike in temperament than in any other character.

What about the colour problem, another asked: has genetics anything useful to say to the would-be adopter of a near-white baby? What are the chances of such a child producing dark offspring? Even this little problem has no simple answer. Professor Penrose was able to report that some twelve genes are concerned in the genetics of skin colour in man. If both parents have all of them their offspring are all very dark; but where one has all twelve, and the other the complementary genes, the children are fairly white. If a child with—roughly—half the dark-colour genes mates with a white, their children would probably show only slight coloration, and the chances of getting a really dark baby would be small. There is no chance of a really dark baby turning up in a family with very light skins, for the colour genes are not recessive, and show up well. This should be some encouragement to would-be adopters of a half-dark baby.

Asked what questions he would himself ask if adopting a child, and why, Professor Penrose declared for a good look at the child and a big grill of tests, including tests for known biochemical abnormalities. It does not matter, he pointed out, what the parents are like if the child has phenylpyruvic acid in its urine. He suggested that a very thorough examination when the child was a year old should exclude anything gross. This, of course, raised the question of where the child was to spend the year, and it is interesting to note that Professor Penrose did not think it would affect the child's later life if he spent it in a residential nursery; though he admitted that many people think the emotional relations formed in the first year important. Later in the discussion he suggested that perhaps it is better for people to take a slightly increased risk and adopt children before they reached the age of one.

He hazarded the opinion that the presence of one dwarf in a family which could boast of several different fathers need not be regarded as an objection to the adoption of one of the normal siblings. He did not think that mental defect in a parent need be a positive objection, but thought that a severe mental illness starting at a relatively early age was serious though not necessarily prohibitive. The genetic background of so-called schizophrenia, he said, is still unknown. With alcoholism he was on slightly firmer ground, recalling that rabbits and guineapigs kept in a state of alcoholic intoxication for four years produced no more abnormal offspring than did a set of sober controls. A history of petit mal in the parents probably does increase the risk of epilepsy in the child, but not necessarily prohibitively: after all, the risk in the general population is 1 in 200. Encephalography will not decide this problem until the child is about ten years old, by which time he will probably be having fits already if he is going to have them at all. The genetic factors concerned in allergy are still somewhat mysterious; and asthma, of course, may develop psychologically, and he could not imagine how that could be avoided.

Aptitude for music and colour-blindness both provide complex genetic problems: a good musician may inherit a dozen different qualities, and a child of two musical parents has a good chance of inheriting some of these. On the other hand, some other gene may determine that he shall be tone-deaf—in which case his other aptitudes will be wasted. As for colour-blindness, there are ten different sorts, the common one being transmitted from mother to son. Roughly speaking, where a mother is a carrier, one son in two will show it, and one daughter in two carry it. But this may not help adopters, because of course the mother of their prospective baby will not herself be colour-blind.

Among all these practical inquirers, one deprecated a policy of caution; it might, he said, save one child from a breakdown in adoption, but it might prevent twenty or thirty from being adopted at all. Professor Penrose evidently sympathised with this opinion. The adopting parents, he said, got better service from the adoption societies than natural parents get from Nature.

HOSTEL FOR RHEUMATIC INDUSTRIAL WORKERS

B.R.A. Homes Ltd., an organisation sponsored by the British Rheumatic Association, has now opened a pioneer hostel at Northwood, Middlesex.

Bracken Hill House is designed to provide diagnosis and treatment for industrial workers, both men and women, suffering from severe early rheumatism, who cannot at once secure accommodation in hospitals equipped with rheumatic units. The object is to prevent permanent crippling due to delay in obtaining adequate treatment.

As involuntary absenteeism due to rheumatism causes serious losses to industry and to the wage-earners in this country, the new hostel is receiving the support of trade and professional associations. Tax-free welfare expenditure will enable firms to nominate their employees for accommodation. Charges can be met (*a*) by the patient, (*b*) by a 7-year covenant of £150 p.a. provided by the firms, benevolent funds, or hospital-continuation service, or (*c*) by grants from the patient's insurance company, &c.

Industrial medical officers or the patient's own doctor may apply for his admission. Inclusive fees vary from £4 15*s*. to £7 7*s*. weekly. Medical services will be provided by the National Health Service, under the direction of the consultant in physical medicine and rehabilitation at Mount Vernon Hospital, Northwood.

Particulars and application forms may be had from the hon. medical officer, Bracken Hill House, Northwood, Middlesex, or from the British Rheumatic Association, 11, Beaumont street, London, W.1.

TWO ADVERTISEMENTS

AFTER more than five years of the National Health Service much remains to be decided about the remuneration and terms of service of professional people working for national, regional, and local authorities. Two unsolved problems—one small and one large—are illustrated by advertisements which we publish this week. In one of them the City of Birmingham is advertising for assistant dental officers, and in the absence of any national agreement on the appropriate sessional fee is offering 3 or 4 guineas according to experience. This advertisement is unacceptable to the British Dental Association, which regards 4 guineas as the correct minimum; but the Dental Whitley Council has not yet declared its views, and until it does so Birmingham is, we think, entitled to state its own terms. The other advertisement, from the South West Metropolitan Regional Hospital Board, invites applications for a whole-time post as plastic surgeon at Odstock Hospital, near Salisbury—an invitation which has evoked strong local objection on the ground that this post should be part-time. The preference of some boards for whole-time appointments, and the preference of most consultants for part-time appointments, raises important issues, on which we hope to comment shortly. But until a coherent policy has been adopted, there seems to be no reason why a board should not be able to advertise a full-time post if it has 11 sessions which it wishes to be undertaken by one consultant.

Course in Child and Family Psychiatry

The department of child psychiatry of the Ipswich Group Hospitals is holding a course on this subject for school medical officers and other doctors from April 5 to 9. Applications should be sent to 11, Fore Street, Ipswich, not later than March 22. There is no fee for the course.

1. Report of the Residential Conference held at Roehampton on July 8–11, 1953. To be had from Mr. A. Rampton, Gort Lodge, Petersham, Surrey. Pp. 138. 5*s*.

University of Oxford

The title of clinical lecturer in neurosurgery has been conferred on Mr. J. B. Pennybacker.

University of Cambridge

On Feb. 20 the following degrees were conferred:

M.D.—Derek Ainslie, A. L. Furniss, R. J. Harrison, P. H. Mitchell.

M.B.—C. J. Pattinson, *P. T. Smith, S. M. Worrall.

*By proxy.

University of London

Dr. J. P. M. Tizard, assistant director of the pædiatric unit at St. Mary's Hospital Medical School and consultant physician at Paddington Green Children's Hospital, has been appointed to the university readership in child health at the Institute of Child Health.

Dr. Tizard received his medical education at the University of Oxford and at the Middlesex Hospital. After graduating as B.M. in 1941 he held a research fellowship in pædiatrics at Harvard University and later was elected to a Nuffield fellowship in child health. In 1944 he took the M.R.C.P., and three years later the D.C.H. He has also held appointments as medical registrar and as pathologist at The Hospital for Sick Children, Great Ormond Street.

Royal College of Physicians of London

Prof. M. L. Rosenheim will deliver the Oliver-Sharpey lectures on Tuesday and Thursday, March 16 and 18, at the college, Pall Mall East, S.W.1, at 5 P.M. He will speak on the Treatment of Severe Hypertension.

Scottish Conjoint Board

The following, having passed the final examination, were admitted licentiates of the Royal College of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow:

H. C. Carver, Thelakavathy Kawsaladevi Chetty, J. B. Collinson, P. T. Huppert, G. C. H. Knight, A. B. Masters, E. P. McKay, J. M. Nichols, A. I. Y. Orr, Manickum Pragalathan Pather, Augustin Pribyl, Katalin E. Schopflin, Frederic Shoucair, Satwant Ahluwalia Singh, Vaclav Vahala, Julius Vitolins.

Ophthalmological Society of the United Kingdom

The annual congress of this society is to be held at the department of chemistry, University of Durham, Newcastle upon Tyne, from April 22 to 24, under the presidency of Dr. A. MacRae. The programme includes discussions on Inflammatory Vascular Diseases affecting the Eye (Mr. R. C. Davenport, Dr. S. P. Meadows, and Prof. J. B. Duguid); Changes in the Incidence of the Eye Affections of Coal-miners in the last 25 Years (Dr. Dorothy Campbell, Mr. W. J. Wellwood Ferguson, and Dr. G. I. Scott); and Gonioscopy after Glaucoma Operations (Mr. H. E. Hobbs and Mr. J. H. Redmond Smith).

Central Council for the Care of Cripples

Immediately after the congress which the International Society for the Welfare of Cripples is holding at the Hague in September, the council has arranged a week's study tour in this country. The tour will leave London on Sept. 20 and the itinerary will include visits to the Vauxhall Motor Works Rehabilitation Centre, Luton; Papworth Village Settlement for Tuberculosis, Cambridge; Portland Training College, Nottingham, for the resettlement in industry of the severely disabled; Berry Hill Hall, Mansfield, for the rehabilitation of the injured miner; the limb-fitting centre at Chapel Allerton Hospital; and Harlow Grange, Harrogate, a home for severely disabled people. Further particulars may be had from the secretary of the council, 34, Eccleston Square, London, S.W.1.

Retrenchment at Plymouth

At a press conference last week (reported in the *Times* of Feb. 26) Alderman H. M. Medland, chairman of the Plymouth hospital group management committee, said that the allocation from the Ministry to the South-Western Region for 1954–55 was £60,000 less than for this year, though a recent award would raise the wage-bill by £123,000. This meant in effect that during the current year the region would have £183,000 less on which to maintain its hospitals. His own group, Mr. Medland explained, faced a deficit of £16,000 on the year's working. The committee had decided that in order to meet this they must close a maternity home at Flete and a nurse's training-school at Liskeard.

A spokesman from the Ministry informed the *Times* that the Minister of Health did not think that his allocation to the South-Western Regional Hospital Board should necessitate any cuts in the services in the region. Indeed provision had been made for some expansion.

International Diabetes Federation

The second congress of this federation is to be held in Cambridge from July 4 to 8, 1955, under the presidency of Sir Lionel Whitby.

Royal Microscopical Society

At a meeting of this society on Wednesday, March 17, at Tavistock House South, Tavistock Square, London, W.C.1, at 5.30 P.M., Dr. F. J. Aumonier will give a lecture on the Regeneration of Striated Muscle Following Coxsackie Infection.

Christian Medical Fellowship

On Tuesday, March 16, at 8.15 P.M., a meeting of this society will be held at the Royal Empire Society, Northumberland Avenue, London, W.C.1. Further particulars will be found in our advertisement columns.

London Marriage Guidance Council

The council is holding a course of lectures at 7 P.M. on Wednesdays, beginning on March 17, at the Royal College of Nursing, Henrietta Place, London, W.1. The speakers will be Dr. P. L. Backus, Dr. Ethel Dukes, Dr. Clifford Allen, Dr. Philip Bloom, and Dr. H. V. Dicks. Further particulars may be had from the secretary of the council, 78, Duke Street, W.1.

Willesden General Hospital Medical Society

The inaugural meeting of this society will be held on Wednesday, March 17, in the department of physical medicine at the hospital, Harlesden Lane, London, N.W.10, when Dr. T. Pearse Williams, the president, will take the chair. The meeting will be open to all doctors in the neighbourhood. Dr. Alec Wingfield and Mr. R. Vaughan Hudson will open a discussion on the Medical and Surgical Aspects of Thyrotoxicosis.

N.A.P.T. Canadian and Hunter Scholarships

The closing date for applications for the scholarships awarded by the National Association for the Prevention of Tuberculosis is March 31.

The Canadian scholarship (£350) is awarded to enable a British chest physician to visit Canada; one Hunter scholarship (£370) is to enable a graduate of a British medical school, resident in the United Kingdom, to spend some six months abroad studying the control of tuberculosis; two other Hunter scholarships (£150 each) are offered to medical students who have been handicapped through tuberculosis, to enable them to complete their training. Further particulars may be had from the Secretary-General, Tavistock House North, Tavistock Square, London, W.C.1.

Changes in Maternity Benefits

Two maternity grants of £9 each are at present paid for twins if both babies are alive the day after they are born. In future survival for 12 hours is to be the criterion instead of survival until the following day.

A mother whose confinement is earlier than expected and who does not claim a maternity allowance—usually 32s. 6*d*. a week for 18 weeks, starting 11 weeks before confinement—until after her confinement can at present get the allowance only for 7 weeks. The only exception is the mother whose confinement is more than 11 weeks early who can get the allowance for the full 18 weeks. In future a mother who claims the allowance after her confinement and whose confinement is early will be able to get the allowance for the number of weeks by which her confinement was early in addition to the 7 weeks.

Remuneration of Consultants

A meeting held in Liverpool on Feb. 28, to discuss the implementation of the Spens report, was attended by 110 consultants and specialists, and by some registrars who had been invited as observers. The following two resolutions were passed unanimously:

1. This Meeting is of the opinion that in any negotiations that may be undertaken it is essential that the Spens Report on Terms and Conditions for Hospital Medical Staff should not be abandoned or altered without reference to the general body of all consultants and specialists. Furthermore, this Meeting is of the opinion that that has been undue delay in the full implementation of the Spens Report and considers that the Whitley machinery is an unsatisfactory method of negotiation. It calls for the right of arbitration, even if this necessitates an amendment in the National Health Act.
2. This Meeting further calls on the Central Consultants and Specialists Committee to consider *now* what further steps should be taken to bring a speedy conclusion to these protracted negotiations.

St. Thomas's Hospital Musical Society is holding a concert on Monday, March 15, at 8.15 P.M., at St. Sepulchre's Church, Holborn.

Messrs. Vitamins Ltd. have a limited number of tickets for doctors who wish to view the Boat Race from the Bemax premises. Application should be made to Dept. B.R.2, Vitamins Limited, Upper Mall, Hammersmith, London, W.6.

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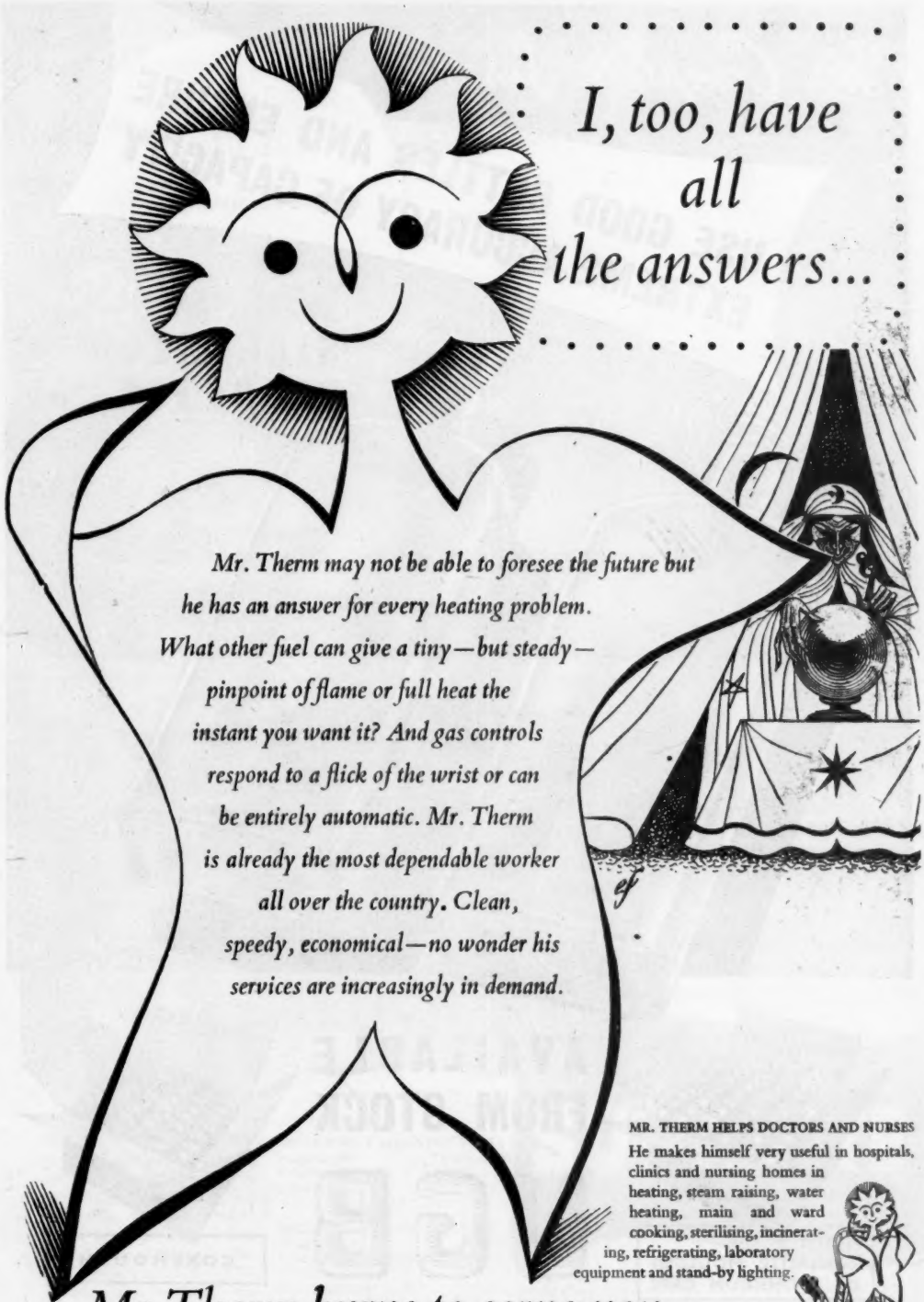

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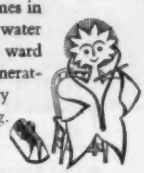

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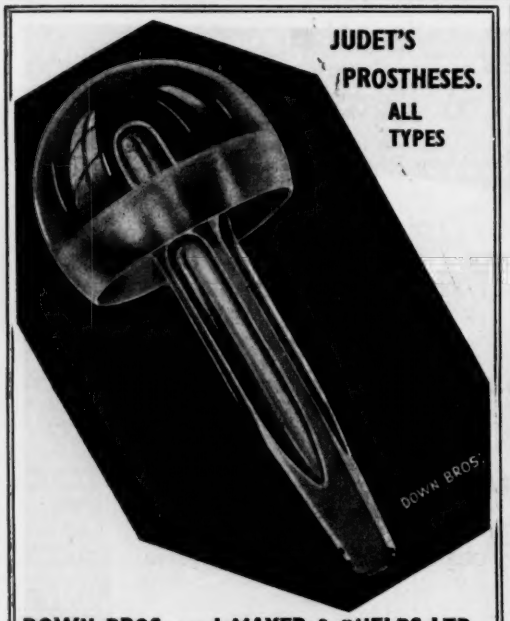

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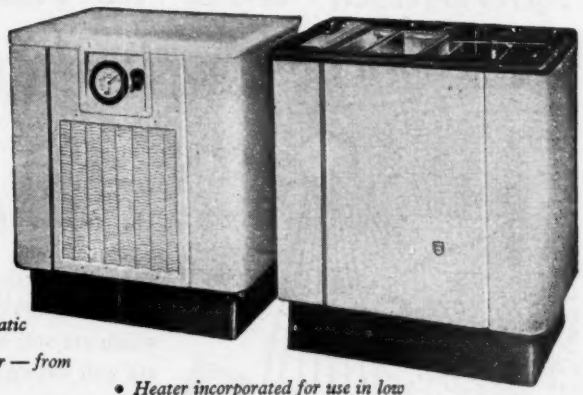

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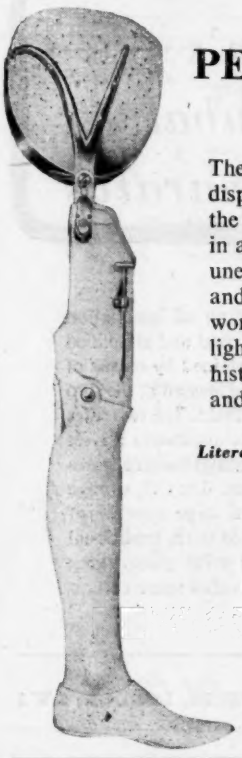

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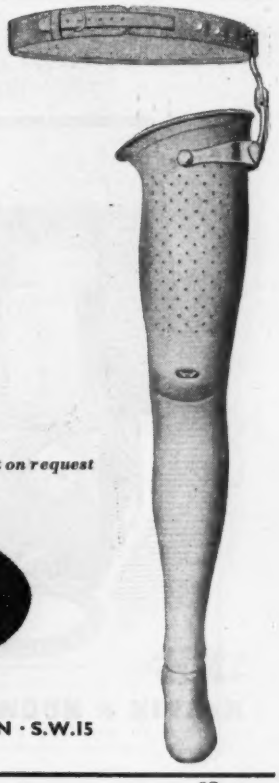

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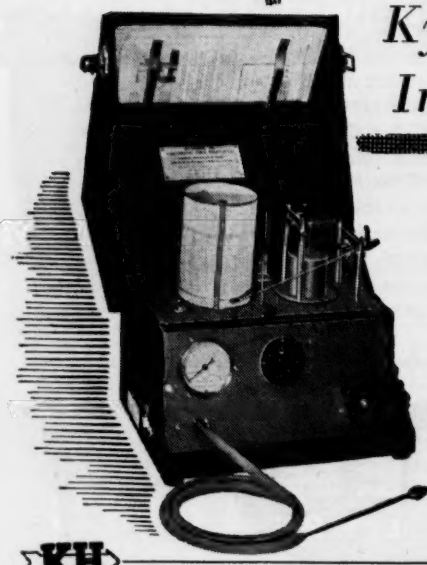

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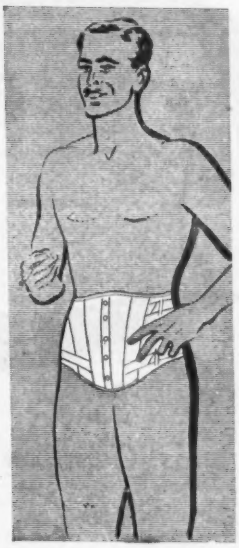

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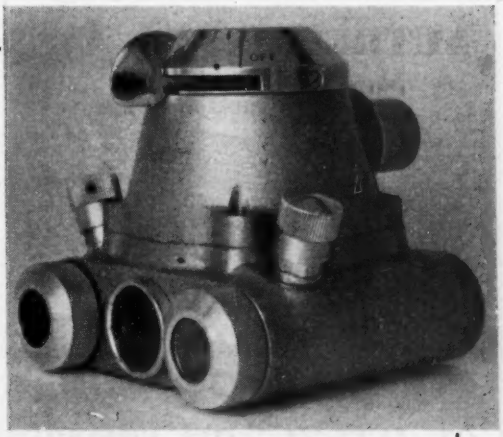

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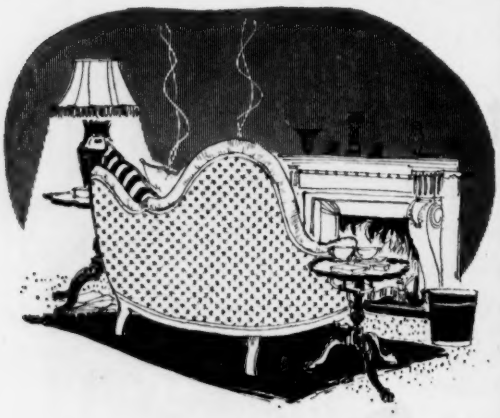

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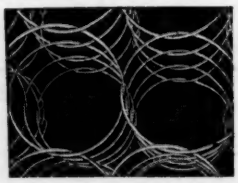

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Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

MAX LEONARD ROSENHEIM, Esq., M.D., F.R.C.P., will deliver the OLIVER-SHARPEY LECTURES on TUESDAY, 16TH MARCH and THURSDAY, 18TH MARCH, 1954, at 5 P.M., at the College, Pall Mall East, S.W.1.

Subject: "The Treatment of Severe Hypertension."

Any member of the Medical Profession admitted on presentation of card.

By order of the President.
HAROLD BOLDERO, Registrar.

ROYAL COLLEGE OF PHYSICIANS

LEVERHULME RESEARCH SCHOLAR

Applications are invited for a Leverhulme Research Scholarship value of £1000 a year. The Scholarship will be for 1 year in the first instance and may be renewed for a maximum of 3 years. A scholar must satisfy the College that the major part of his time is spent on his research but he may be allowed to hold another appointment. Scholars must devote themselves to the investigation of some problem related to disease as it occurs in man, in any branch of medicine. The work must be done in some established institution, preferably in the United Kingdom, in which full facilities for the research are available.

Applications, accompanied by the names of 2 referees, should state details of the proposed work, the name of the individual under whom it is proposed to work and the Institution where the work is to be done. Application forms may be obtained from the Assistant Registrar, Royal College of Physicians, Pall Mall East, London, S.W.1. Applications for the Scholarship must be received not later than 1st June, 1954.

FACULTY OF ANÆSTHETISTS
of the
ROYAL COLLEGE OF SURGEONS OF ENGLAND

EXAMINERSHIPS

The Board invite applications for the following Examinerships for submission to the Council of the College :—

FELLOWSHIP OF THE FACULTY OF ANÆSTHETISTS

PRIMARY EXAMINATION

	Number to be elected
*Anatomy	2
*Physiology	2
*Pathology	2
*Pharmacology	2

FINAL EXAMINATION

†Medicine	1
‡Surgery	1
§Anæsthetics	8

*Applicants must hold a medical qualification registrable in this country.

†Applicants must hold a higher degree or diploma in Medicine.

‡Applicants must be Fellows of the College.

§Applicants must be Fellows of the Faculty.

Forms of application may be obtained from Mr. W. F. Davis, Secretary, Faculty of Anæsthetists, and must be returned by not later than 5th April, 1954. W. F. DAVIS.

FACULTY OF DENTAL SURGERY
ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Board invite applications for the following EXAMINERSHIPS for submission to the Council of the College :—

FOR THE LICENCE IN DENTAL SURGERY

FIRST EXAMINATION, PART I

	Number to be elected
Anatomy	1
Physiology	1

FIRST EXAMINATION, PART II

Special Anatomy and Physiology	4

SECOND EXAMINATION

Dental Prosthetics and Properties of Dental Materials	5

*FINAL EXAMINATION

Dental Section	4

FOR THE FELLOWSHIP IN DENTAL SURGERY

PRIMARY EXAMINATION

Anatomy	2
Physiology	2
Pathology	2
Dental Section	2

*FINAL EXAMINATION

Dental Section	4

*Candidates must be registered under the Dentists Acts, 1878–1923.

Application forms may be obtained from the Secretary of the Faculty and must be returned to him by Saturday, 27th March, 1954. W. F. DAVIS, Secretary, Faculty of Dental Surgery.

UNIVERSITY OF LONDON

A COURSE OF 3 LECTURES on "Man at Work, a Physiological Analysis" will be given by Prof. E. A. MÜLLER (Max Planck Institute of Industrial Physiology, Dortmund) at 5.15 P.M. on 10TH, 11TH, and 12TH MARCH at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

THE CHRISTIAN MEDICAL FELLOWSHIP

TUESDAY, 16TH MARCH, at 8.15 P.M. Open Meeting in the Hall of the Royal Empire Society, Northumberland-avenue, London, W.C.1 (please use the Craven-street entrance).

Chairman: Sir JAMES PATERSON ROSS, K.C.V.O., M.S., F.R.C.S.

Speaker: D. MARTYN LLOYD-JONES, M.D., M.R.C.P.

Further details from the Secretary, Christian Medical Fellowship, 39, Bedford-square, London, W.C.1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Council invite applications for the following Annual Examinerships :—

FOR THE FELLOWSHIP	No. to be elected	No. who seek re-election
*Anatomy	4	3
*Applied Physiology and Pathology	4	2
*Associate Examiner in Ophthalmology	1	1
FOR THE LICENCE IN DENTAL SURGERY		
Board of Examiners in Dental Surgery (Surgical Section) (Examiners must be Fellows of the College, and will be required to examine in General Surgery (including Surgical Pathology), Medicine, General Pathology, and Bacteriology)	6	6
FOR THE FELLOWSHIP IN DENTAL SURGERY		
Board of Examiners for the Fellowship in Dental Surgery (Examiners must be Fellows of the College, and will be required to examine in General Surgery)	2	2
FOR THE FELLOWSHIP OF THE FACULTY OF ANÆSTHETISTS		
The Examiner must be a Surgeon and will be required to conduct (with a Physician) Part II (Medicine and Surgery) of the Final Examination	1	1
UNDER THE EXAMINING BOARD IN ENGLAND		
Elementary Biology	2	0
*Anatomy	3	3
*Physiology	2	2
†Midwifery	4	2
Pathology (for M.R.C.S., L.R.C.P.) :—		
Surgeons	2	1
Pathologists	2	2
Public Health :—		
Preliminary	1	1
Final	1	1
Tropical Medicine and Hygiene :—		
Pathology and Tropical Hygiene	1	1
Tropical Medicine and Surgery	1	1
Ophthalmology	7	2
Psychological Medicine :—		
Part I (Neurologist)	1	1
Laryngology and Otology :—		
Part I	2	2
Part II	1	1
Medical Radio-Diagnosis :—		
Part I	1	0
Part II	1	0
Medical Radiotherapy :—		
Part I	1	0
Part II	1	0
Anæsthetics :—		
Surgeon	1	1
Anæsthetist	1	1
Child Health	3	2
Physical Medicine :—		
Part I	2	1
Part II	2	1
Industrial Health	1	1
Pathology (for Diploma in Pathology)	2	2

*Candidates must hold a medical qualification registrable in this country.

†Candidates must be Fellows or Members of the College.

Forms of application can be obtained from the Secretary, and these must be completed and returned by Saturday, 27th March 1954. KENNEDY CASSELS, Secretary.

6th March, 1954, Lincoln's Inn-fields, W.C.2.

UNIVERSITY OF GLASGOW
POST-GRADUATE MEDICAL EDUCATION COMMITTEE

COURSE IN DERMATOLOGY

A Course in Dermatology organised primarily for specialist trainees in Dermatology or in General Medicine, but open also to General Practitioners will be held from 21ST APRIL to 28TH JUNE, 1954.

The Course will consist of 30 Lecture-Demonstrations (syllabus on request), given thrice weekly on MONDAYS, WEDNESDAYS, and FRIDAYS at 4.15 P.M. in the Anderson College Building, The University, Glasgow. In addition, those taking the Course may attend 2 Clinical Demonstrations per week in 1 of various Teaching Hospitals at hours arranged, so far as possible, to suit applicants.

The fee for the complete Course, including the optional Clinical Demonstrations, is 10 guineas. Arrangements are available whereby National Health Service practitioners attending part or all of the Course may recover the fee and travelling expenses from Government sources.

Early application should be made to the Director of Post-Graduate Medical Education, The University, Glasgow, W.2, from whom further information may be obtained.

THE ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE

THE CERTIFICATE, AND THE DIPLOMA, IN PUBLIC HEALTH, AND THE DIPLOMA IN INDUSTRIAL HEALTH

The next bi-annual Course of Instruction for the Certificate in Public Health (C.P.H.) will commence on 19TH MARCH, 1954. This leads to Courses both for the Diploma in Public Health and for the Diploma in Industrial Health. All Courses may be taken either whole-time or part-time.

Prospectuses, enrolment forms, and full details may be obtained from the Secretary, 28, Portland-place, London, W.1 (Telephone: LANgham 2731–2).

COURSE IN ADVANCED CLINICAL ORTHOPÆDICS

at the

INSTITUTE OF ORTHOPÆDICS
29TH MARCH–3RD APRIL, 1954

29th March Town Section	Manipulation	Mr. H. J. BURROWS
	Tendon surgery	Mr. J. I. P. JAMES
	Joint biopsy	Dr. H. A. SISSONS
	The painful foot	Mr. K. I. NISSEN
30th March Country Section	Medical aspects of joint tuberculosis	Dr. F. H. STEVENSON
	Laboratory studies of joint diseases	Dr. C. H. LACK
31st March Town Section	Recurrent dislocation of shoulder	Mr. D. TREVOR
	Painful shoulder	Mr. D. TREVOR
	Clinical demonstration	Mr. A. T. FRIPP
1st April Country Section	Tuberculosis of the knee and hip	Mr. J. A. CHOLMELEY
	Clinical demonstration	Mr. P. H. NEWMAN
2nd April Country Section	Use of plastics in orthopædics	Dr. J. T. SCALES
	Biochemistry of joint diseases	Dr. L. E. GLYNN
3rd April Country Section	Plastic surgery in orthopædics	Mr. R. L. G. DAWSON

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, W.1.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

CANADIAN AND HUNTER SCHOLARSHIPS

(1) British Chest Physician to visit Canada. £350.

(2) Graduate of British Medical School resident in United Kingdom to study tuberculosis abroad. £350.

(3) 2 medical students handicapped through tuberculosis to complete training at medical school in England or Wales. £150 each.

Write Secretary-General, National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock-square, London, W.C.1. Closing date for all applications 31st March, 1954.

THE WELLCOME FOUNDATION LIMITED invites applications for the position of HEAD of the Biological Division, The Wellcome Research Laboratories, Beckenham. The Division is engaged on research in immunology, bacteriology, virology and biochemistry in both medical and veterinary fields and is also responsible for the production of antitoxins, prophylactics, vaccines and bacteriological diagnostic reagents. The Head will be required to direct and coördinate the activities of the various departments, each of which is in the charge of a highly qualified and experienced Scientist. The position involves considerable responsibilities, primarily of a scientific character. Candidates should be medically qualified and have had research experience in a senior capacity in 1 of the subjects named.

Applications should be addressed to the Research Director, The Wellcome Foundation Limited, 183–193, Euston-road, London, N.W.1.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (University of London), London, S.E.1. Applications are invited for the post of LECTURER in the Sherrington School of Physiology. Appointment to start as soon as can be arranged and not later than 1st October, 1954. Candidates must be medically qualified. Salary £800–£1100, according to qualifications and experience, with superannuation and family allowance.

Applications, in triplicate, with the names of 3 referees, should be addressed to the Dean of the Medical School and should be received not later than 14th April, 1954.

QUEEN ELIZABETH COLLEGE (University of London), Campden Hill-road, London, W.8. Applications are invited for appointment as LECTURER IN NUTRITION as from October, 1954. Knowledge of agricultural subjects desirable but not essential. Salary scale £650–£50–£900; thereafter, subject to review, by £50 to £1150.

Further particulars may be obtained from the Secretary.

UNIVERSITY OF LONDON. The Senate invite applications for the READERSHIP IN PHARMACOLOGY AND THERAPEUTICS tenable at University College and University College Hospital Medical School (salary within the range £1200–£1800 a year).

Applications (10 copies) must be received not later than 7th April, 1954, by the Academic Registrar, University of London, Senate House, W.C.1. from whom further particulars should be obtained.

UNIVERSITY OF DURHAM. Applications are invited for the post of READER IN SURGERY, tenable in the Medical School, King's College, Newcastle upon Tyne. The post is full-time and carries responsibilities in teaching, research and clinical practice in the Medical School, King's College, and in the United Newcastle upon Tyne Hospitals. Salary within the range of £1700–£2000 p.a. with superannuation (F.S.S.U.) and family allowance. The Reader will hold by honorary contract the post of Assistant Surgeon in the Royal Victoria Infirmary.

Further particulars may be obtained from the undersigned, with whom applications (18 copies, except that candidates residing outside the British Isles may submit 1 copy) containing the names of 3 referees should be lodged by 15th March.

E. M. BETTENSON, Registrar.

University Office, 46, North-bailey, Durham.

HEBREW UNIVERSITY OF JERUSALEM. There are vacancies for Senior and Junior positions in the range of INSTRUCTOR and ASSISTANT PROFESSOR in the Department of Bacteriology.

Applicants should write in confidence to Prof. SAMSON WRIGHT, Middlesex Hospital, W.1, who will provide full information.

UNIVERSITY OF GLASGOW. Applications are invited for a LECTURESHIP IN BACTERIOLOGY (medical) at the Western Infirmary, Glasgow. The Lecturer will also be an Assistant Bacteriologist to the Infirmary. The appointment will be whole-time and the stipend will be between £1000 and £1500. Initial salary will be fixed according to experience and qualifications.

Applications (14 copies), should be lodged not later than 3rd April, 1954, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF BELFAST. Applications are invited for a LECTURESHIP IN DENTAL SURGERY at The Queen's University of Belfast from 1st October, 1954. Salary £1300–£50–£1750, plus provision for superannuation. In certain conditions the salary will rise to £2000. Initial placing on the scale will depend on experience and qualifications.

Applications should be received by 20th May, 1954. Particulars from G. R. COWIE, M.A., LL.B., Secretary.

THE RESEARCH INSTITUTE OF THE HOSPITAL FOR SICK CHILDREN, TORONTO, CANADA. RESEARCH FELLOWSHIP IN NEUROLOGY. Applications invited from medical graduates (Male or Female) with training in pædiatrics or neurology. Duties will consist chiefly of investigation of convulsive disorders in young children by clinical and laboratory methods, under the direction of Dr. J. S. Prichard. Post vacant 1st May, 1954. Salary $5000. Preference given to persons prepared to work for a 2-year period.

Applications, with names and addresses of 2 referees, to be submitted (airmail) immediately to Dr. A. J. RHODES, Director, The Research Institute, The Hospital for Sick Children, 555, University-avenue, Toronto, Canada.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT ANÆSTHETIST (7/11ths) Central Middlesex Hospital, N.W.10 (726 Beds).

Detailed applications by 6th April, 1954.

(2) Whole-time ASSISTANT PSYCHIATRIST, Cell Barnes Hospital, St. Albans (676 Beds), to act as Deputy Medical Superintendent. D.P.M. and/or equivalent mental deficiency experience. Salary scale £1300 (at age 32 years)–£1750.

Detailed applications by 10th April, 1954.

Hospitals may be visited by direct appointment.

Applications (3 referees) to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Senior Hospital Medical Officer in Medical Genetics. Applications are invited from suitably qualified medical practitioners for appointment to the post of GENETICIST. The appointment is for 2 sessions per week in the grade of Senior Hospital Medical Officer.

Further particulars and form of application, which must be returned not later than Monday, 5th April, 1954, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. UNITED CAMBRIDGE HOSPITALS. CONSULTANT CHILD PSYCHIATRIST (whole-time). The appointment, which is a new one, will be made jointly by the 2 Boards. The successful candidate will be in charge of a central clinic in independent premises in Cambridge, diagnostic sessions in the Psychiatric Outpatient Department of Addenbrooke's Hospital, and branch clinics in the area. The new service will be associated with the University Department of Psychology, and in day-to-day practice with the Local Health and Education Authorities of the area.

Applications (12 copies), stating age, qualifications, and details of present and previous appointments, together with names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 15th March, 1954. Candidates invited to visit by arrangement with Senior Administrative Medical Officer at above address.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT DERMATOLOGIST, Ipswich Hospitals area. Main hospitals East Suffolk and Ipswich and Borough General, Ipswich. Duties include responsibility for Venereal Disease Clinics at Ipswich and Bury St. Edmunds. Higher qualifications and wide experience in dermatology and venereal diseases necessary. Appointment for the equivalent of 8 notional half-days with probable increase to maximum part-time (or whole-time if desired) at a later date.

Detailed applications (8 copies), including age, to Secretary of Board, 117, Chesterton-road, Cambridge, by 22nd March, 1954.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT ANÆSTHETIST (whole-time), Norfolk and Norwich Hospital Group. Duties will include approximately 2 sessions per week at Lowestoft and North Suffolk Hospital. Higher qualification and wide experience essential. Salary scale £1300–£1750.

Detailed applications (8 copies), including age, to Secretary of Board, 117, Chesterton-road, Cambridge, by 22nd March, 1954. Candidates invited to visit the hospitals concerned by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital, Norwich.

LEEDS REGIONAL HOSPITAL BOARD. Part-time appointment (9 sessions per week) of CONSULTANT in Orthopædic Surgery for duties at hospitals and clinics in the Huddersfield area.

Applications (12 copies), stating age, qualifications, and details of appointments held, showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 26th March, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Part-time CONSULTANT in Radiology (7 sessions per week). The successful applicant will be required to undertake 4 sessions per week at the Harrogate General Hospital and 3 sessions per week at hospitals in Leeds.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 27th March, 1954.

BARNET GENERAL HOSPITAL. Locum Tenens ASSISTANT ORTHOPÆDIC SURGEON required at above Hospital for period 8th–28th March.

Apply, Group Secretary, Wellhouse-lane, Barnet, Herts.

LIVERPOOL REGIONAL HOSPITAL BOARD. Winwick HOSPITAL. Applications are invited for the posts of 2 Whole-time ASSISTANT PSYCHIATRISTS with duties at the above Hospital. Applicants should possess the D.P.M. or an equivalent qualification and have had reasonable experience in psychiatry, including practical knowledge of outpatient work. Duties will include attendance at outpatient clinics outside the Hospital. Salary £1300–£50–£1750 p.a.

Forms of application from and to be returned to Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 20th March, 1954.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. North WIRRAL, BIRKENHEAD AND CENTRAL WIRRAL AREAS. Applications are invited for the post of CONSULTANT RADIOLOGIST with duties mainly at Clatterbridge General, Victoria Central, and Birkenhead General Hospitals, but will include sessions at other hospitals in the Area. The appointment is whole-time or part-time on maximum sessions according to the choice of the successful candidate, who should possess a D.M.R. and have had wide experience in radiology.

Forms of application from and to be returned to Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 27th March, 1954.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for 2 whole-time non-resident posts of ASSISTANT RADIOLOGISTS :—

(i) West Manchester Hospital Centre: Park Hospital, Davyhulme (426 Beds); Eccles and Patricroft Hospital; Stretford Memorial Hospital.

(ii) Ashton, Hyde and Glossop Hospital Centre: Ashton-under-Lyne General Hospital (Lake and Infirmary Branches), 637 Beds, &c.

Applicants should possess the D.M.R.D. and have good experience of diagnostic radiology. Salary £1300–£50–£1750.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 16th March, 1954, candidates for more than 1 post to state their preference.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time non-resident post of Additional CONSULTANT ORTHOPÆDIC AND ACCIDENT SURGEON to the North Manchester Hospital Centre (Crumpsall Hospital, Ancoats Hospital, &c.), and at Booth Hall Children's Hospital. Appointee required to take a special interest in the organisation, &c., of the Accident (including Burns) Services. Higher qualifications and wide experience essential.

Application forms from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, to be returned by 15th March, 1954.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time CONSULTANT PLASTIC SURGEON for the Western Area Plastic and Oral Surgery Unit at Odstock Hospital, Salisbury. Apart from duties at Odstock Hospital, Consultant appointed will assist in running peripheral clinics throughout the Western Area.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 31st March, 1954. Applicants may visit Unit by local arrangement.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA OF CUMBERLAND AND NORTH WESTMORLAND. CONSULTANT PATHOLOGIST, whole-time or part-time for 9 sessions per week, for the Special Area Pathology Service, with special responsibility for West Cumberland Group of hospitals; to live within a reasonable distance of Workington Infirmary where a new Department of Pathology has recently been completed. Special knowledge of both bacteriology and biochemistry is desirable. Further particulars may be obtained from the Area Senior Consultant Pathologist, Dr. J. S. Faulds, Cumberland Infirmary, Carlisle.

Applications, together with names and addresses of 1–3 referees, to be sent to the Senior Administrative Medical Officer, 1, Lonsdale-street, Carlisle, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. (Newcastle Eye Hospital, 34 Beds; Walker Eye Hospital, 21 Beds.) ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer status) required for hospitals in the Group. Salary scale £1300–£1750 whole-time, pro rata part-time. The appointee will have special responsibility under the Consultant Ophthalmologists at the Walker Hospital and will be required to live near it, but will also work as required at the Newcastle Eye Hospital and elsewhere. Further particulars may be obtained from the Senior Consultant Ophthalmologist, Eye Hospital, St. Mary's-place, Newcastle upon Tyne.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD AND BOARD OF GOVERNORS OF UNITED NEWCASTLE UPON TYNE HOSPITALS, SOUTH SHIELDS AND NEWCASTLE HOSPITAL MANAGEMENT COMMITTEES. CONSULTANT PÆDIATRICIAN, whole-time, or part-time for a minimum of 9 notional half-days per week—i.e., 5 or 4 sessions, Ingham Infirmary and the General Hospital, South Shields; 5 or 4 sessions Fleming Hospital and the Children's Department of the Newcastle General Hospital; and 1 session in the Children's Department of the Teaching Hospital. Salary in accordance with national terms and conditions. Appointee required to reside in South Shields.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Darlington HOSPITAL MANAGEMENT COMMITTEE. NORTHALLERTON HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. (Main hospitals—Darlington Memorial and Hundens Unit, 300 Beds (including 20 eye beds); Friarage Hospital, Northallerton, 300 Beds; Bishop Auckland General Hospital, 300 Beds.) Population 300,000. ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer status) required for hospitals in the Groups. Salary scale £1300–£1750 whole-time, pro rata part-time. Further particulars may be obtained from the Consultant Ophthalmologist, Memorial Hospital, Darlington.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment as :—

Part-time CONSULTANT PÆDIATRICIAN, Harold Wood Hospital, Essex (4 sessions a week); Ilford Public Health Offices Clinic (1 session a fortnight); Ilford Maternity Hospital (duties as required). Joint appointment.

Part-time CONSULTANT ANÆSTHETIST, King George Hospital, Ilford, Essex (2 sessions a week); Ilford Isolation Hospital (1 session a week). Joint appointment.

Part-time CONSULTANT ANÆSTHETIST, Hertford Group of Hospitals (8 sessions a week). Residence in the Group area is a requirement of the appointment. Further details on application.

Applications (6 copies), indicating post concerned and detailing private address, date of birth, qualifications and experience, present appointment(s) (including number of sessions) and grade, and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 20th March.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of CONSULTANT ANÆSTHETIST based at the Victoria Infirmary, Glasgow, with duties at the Regional Thoracic Units at Mearnskirk Hospital and Hairmyres Hospital. The appointment is whole-time or part-time on the basis of 9 sessions weekly. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the posts of CONSULTANT ANÆSTHETISTS (2) which will be based on the Glasgow Western Group of hospitals (Western Infirmary). The appointments will be whole-time or maximum part-time on a basis of 9 sessions weekly. They will include primarily a division of 8 sessions weekly in the Glasgow Ear, Nose and Throat Hospital and 6 sessions weekly in the Glasgow Eye Infirmary. The remaining sessions will be allocated in the Western Region and it is expected that they will include thoracic and emergency surgery in addition to teaching duties. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, from whom further particulars may be obtained, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Part-time CONSULTANT SURGEON in charge of Wards at Glasgow Royal Infirmary on the basis of 7 sessions weekly. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT ORTHOPÆDIC SURGEON for the Royal Infirmary, Doncaster, and the Montagu Hospital, Mexborough.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 27th March, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. CONSULTANT SURGEON required for 8 notional half-days per week. Duties at the Doncaster Royal Infirmary.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 27th March, 1954.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum CONSULTANT PHYSICIAN, for Caerphilly Miners' Hospital, 27th April–29th June.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a CONSULTANT PATHOLOGIST—based at Llanelly Hospital. Candidates should hold a higher qualification in pathology or medicine. The successful candidate will be asked to state whether he wishes to hold a whole-time or maximum part-time appointment.

Applications (12 copies), giving full particulars of age, qualifications and experience, naming 3 referees, should be sent to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of an ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale) under the direction of the Group Consultant Anæsthetist, based at Bridgend General Hospital and may also be expected to serve other hospitals within the district. Candidates should have had a wide experience in the specialty.

Applications (12 copies), giving full particulars of age, qualifications and experience, naming 3 referees, should be sent to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a post as CONSULTANT ORTHOPÆDIC SURGEON for duties at the Royal Belfast Hospital for Sick Children; Musgrave Park Hospital, Belfast; the Orthopædic Hospital, Greenisland; and peripheral clinics organised by the Northern Ireland Orthopædic Service. The appointment will be on a part-time basis of 9 half-days duty weekly.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and will be received not later than 29th March, 1954.

NEW ZEALAND. COOK HOSPITAL BOARD, Gisborne, NEW ZEALAND. Applications are invited from registered medical practitioners for the appointment of a RADIOLOGIST with the above Board. Salary in accordance with the Hospital Employment Regulations salary rates for the following gradings:

Senior Specialist: £1690–£1940.

Junior Specialist: £1290–£1590.

The amounts quoted are in New Zealand currency and the position is non-resident. Gisborne, with a population of 21,000, is situated on the sea coast and enjoys an ideal climate. Conditions of appointment will be supplied on application to the High Commissioner for New Zealand, 415, Strand, London, W.C.2, mentioning this paper and quoting reference number 3/65/11.

Completed applications to be sent direct by air mail to the Secretary, Cook Hospital Board, Gisborne, New Zealand, to arrive not later than Wednesday, 31st March, 1954.

QUEENSLAND, AUSTRALIA. ROCKHAMPTON BASE HOSPITAL, ROCKHAMPTON. Applications in writing are invited for the part-time appointment of E.N.T. SURGEON, with right of private practice. Salary is at the rate of £540 p.a. The appointment is for 3 years, and the holder is eligible for reappointment. Rockhampton has a population of 40,000 and the Rockhampton Hospital, as a base hospital, serves a large country region. Further particulars will be forwarded upon request.

Applications should be addressed to the Secretary, Rockhampton Hospitals Board, Rockhampton, Queensland (Australia). Applications close 30th April, 1954.

WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL. The Board of Management invites applications from legally qualified medical practitioners for the position of DIRECTOR of Anæsthesia. The successful applicant will be responsible for the administration of the Anæsthetic Service in the Hospital (650 Beds plus new wings under construction). Applicants must possess a senior degree in anæsthesia or its equivalent. Salary will be at the rate of £2400 (Aust.) p.a. Details regarding general conditions in this State are procurable on application to the Agent General for Western Australia, Savoy House, Strand, London. Inquiries regarding the Hospital's medical services should be addressed by air mail to the Medical Superintendent at this Hospital.

Applications, giving full details of age, marital state, qualifications, experience, war service, &c., and names of 2 referees, to be lodged with the undersigned by 1st May, 1954.

JOSEPH GRIFFITH, Manager.

Hospital Services: Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. CASUALTY OFFICER/HOUSE SURGEON (resident). House Officer or Senior House Officer grade according to experience. Vacant mid-April.

Apply, enclosing copies of 2 recent testimonials, to Hospital Secretary (L.).

BOW GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN for general medical wards. Post will become vacant on or about 1st April, 1954.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be sent to the Hospital Secretary, St. Clement's Hospital, 2A, Bow-road, London, E.3.

BROOK GENERAL HOSPITAL, Shooters Hill-road, Woolwich, S.E.18. HOUSE PHYSICIAN (Infectious Diseases Unit), vacant now. The unit is one of the Regional Centres for the treatment of bulbar poliomyelitis. 6 months appointment, salary £450 p.a., less £100 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT SENIOR HOUSE OFFICER required for Casualty Department. Successful candidate will work under supervision of Orthopædic and Traumatic Specialist. Preference given to applicant who has held resident surgical and medical posts in general hospitals. Post vacant 26th April, 1954. Appointment for 6 months subject to renewal for further 6 months.

Applications, with names of 2 referees or copies of 2 testimonials, to Medical Director by 20th March, 1954.

DULWICH HOSPITAL, East Dulwich-grove, S.E.22. Applications invited for appointment as HOUSE OFFICER (general medical duties). Recognised pre-registration post. Vacant from 1st April, 1954.

Apply, giving details of age, qualifications and previous posts (if any), with names of 2 referees, to the Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, S.E.22.

EASTERN HOSPITAL (Fevers), Homerton-grove, London, E.9. Applications for the post of SENIOR HOUSE OFFICER (deduction £130 p.a. for residence) should be sent to the Group Secretary, Hackney Hospital, London, E.9, with copies of 3 testimonials. The post is for 1 year in the first instance; duties of successful candidate may include some work in the Chest Unit.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE PHYSICIAN. Appointment for 6 months from 1st May, 1954. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 10th March, 1954.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE SURGEON, with charge of general surgical beds. Appointment for 6 months from 1st May, 1954. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 10th March, 1954.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of REGISTRAR (whole-time, first year) in the Department of Psychological Medicine. Post offers good opportunities for postgraduate medical and psychiatric work. Duties will include teaching and inpatient and outpatient work and will commence on 1st April.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 12th March, 1954.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR (first year) in the Department of Psychological Medicine (4 sessions per week). Duties to commence on 1st April, 1954.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 12th March, 1954.

HAMPSTEAD GENERAL HOSPITAL AND ELIZABETH GARRETT ANDERSON HOSPITAL. Applications are invited for the post of REGISTRAR to the E.N.T. Departments at the Hampstead General and Elizabeth Garrett Anderson Hospitals. Duties will commence on 1st May, 1954. Applicants should be registered medical practitioners of not more than 10 years standing.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 12th March, 1954.

HACKNEY HOSPITAL, London, E.9. (General—844 Beds.) Applications for the 6 months appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade), vacant immediately, should reach the Group Secretary, Hackney Hospital, E.9, as soon as possible, quoting reference HH/CO.

KING EDWARD MEMORIAL HOSPITAL, Ealing. PERIVALE MATERNITY HOSPITAL, GREENFORD. REGISTRAR (whole-time) in Obstetrics and Gynæcology, required for duty at King Edward Memorial Hospital, Ealing (17 gynæcological beds), Clayponds Hospital, South Ealing (3 gynæcological beds), Perivale Maternity Hospital, Greenford (50 obstetric beds). Resident at Perivale Maternity Hospital. Vacant 15th May, 1954. Candidates may visit hospitals by appointment with Hospital Secretary.

Application forms obtainable from and returnable to, the Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, Middlesex, by 16th March, 1954.

KING EDWARD MEMORIAL HOSPITAL, Ealing, and CLAYPONDS HOSPITAL, SOUTH EALING. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required mainly for E.N.T. duties but with some general work at King Edward Memorial Hospital and Clayponds Hospital. Resident at Clayponds Hospital.

Apply in writing, stating age, nationality, qualifications with dates and previous experience, together with names of 2 referees, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 16th March, 1954.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. Applications invited for the post of RESIDENT HOUSE SURGEON, vacant 6th April, 1954. Tenable for 6 months, renewable. Salary £350, £400, or £450 p.a. according to experience, subject to deduction at the rate of £100 for board, lodging, &c. Available as pre-registration appointment.

Applications, with copies of testimonials, to the Secretary at the Hospital.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the positions of RESIDENT HOUSE PHYSICIANS (2), vacant on 1st and 13th April, 1954.

Forms of application from the Physician-Superintendent.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited from registered medical practitioners for the position of RESIDENT HOUSE SURGEON in the Obstetric and Gynæcological Department. The appointment is for 6 months and is vacant on 16th April, 1954. The Hospital is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Forms of application may be obtained from the Physician-Superintendent at Hospital.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for the appointment as RESIDENT CASUALTY OFFICER from 5th April, 1954. The position is graded as Senior House Officer, or House Officer, according to experience, and is recognised for the F.R.C.S.

Forms of application from the Physician-Superintendent.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy), vacant April, 1954.

Applications with copies of testimonials to the Medical Director.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. CASUALTY OFFICER (Senior House Officer), non-resident, required. 6 months appointment from 1st April, with possible extension to 1 year. Hours: 9 A.M.–5 P.M. Monday–Friday, 9 A.M.–1 P.M. Saturday, no Sundays. Duties: mainly surgical casualties (including fractures) and outpatients: over 2500 minor operations a year.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital by 15th March.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) SURGICAL REGISTRAR (resident), Tilbury and Riverside General Hospital. Post recognised for F.R.C.S.

(2) SURGICAL REGISTRAR (resident), Black Notley Hospital, near Braintree, Essex. Post recognised for F.R.C.S.

(3) ORTHOPÆDIC REGISTRAR (resident), Black Notley Hospital, near Braintree, Essex. Post recognised for F.R.C.S.

(4) CASUALTY REGISTRAR (resident), General Hospital, Southend-on-Sea. Post recognised for F.R.C.S. Duties chiefly in Casualty Department under supervision of Orthopædic Consultant. Opportunities for work in Fracture Clinics and association with work of Orthopædic Department.

(5) REGISTRAR in Medicine (resident or non-resident), Hackney Hospital, Homerton, E.9.

(6) PÆDIATRIC REGISTRAR (resident or non-resident), Mile End Hospital, E.1.

(7) REGISTRAR in Obstetrics and Gynæcology (resident), North Middlesex Hospital and Annexes, Edmonton. Post recognised for M.R.C.O.G. (150 obstetric and 70 gynæcological beds.)

(8) REGISTRAR in Obstetrics and Gynæcology (resident), Mile End Hospital, E.1.

(9) ANÆSTHETIC REGISTRAR (resident preferred), Harold Wood Hospital, Essex.

(10) REGISTRAR in Pathology (resident or non-resident), St. Andrew's Hospital, Bow, E. Candidates should have experience of pathology.

(11) E.N.T. REGISTRAR (non-resident), West Ham Group of hospitals.

Appointments subject to review after 1 year.

Separate applications in duplicate, detailing date of birth, qualifications, experience, present appointment, grade and salary, with 2 copies of 2 recent testimonials, to Secretary, 11a, Portland-place, W.1, by 20th March, 1954.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, RECEIVING-ROOM OFFICER (Senior House Officer grade) for a period of 3 months from 1st April to 30th June.

Applications as soon as possible to the Hospital Secretary, stating age, nationality and qualifications.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) TOTTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE (GROUP 4). Applications are invited from registered medical practitioners for the appointment of RESIDENT SENIOR CASUALTY OFFICER (second or third post), for a period of 6 months, vacant now.

Application form from Secretary.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. SURGICAL REGISTRAR (general surgery). Whole-time.

Application forms from Secretary, St. Luke's Hospital, Sydney-street, Chelsea, S.W.3 (enclose foolscap stamped addressed envelope).

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. (572 Beds.) Applications are invited for the post of Whole-time NON-RESIDENT SURGICAL REGISTRAR. Ward and outpatient duties. Teaching of medical students from St. Mary's Hospital Medical School. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 22nd March, 1954.

ST. THOMAS'S HOSPITAL AND THE SOUTH-WEST METROPOLITAN REGIONAL HOSPITAL BOARD. (Joint appointment.) Whole-time SENIOR SURGICAL REGISTRAR at St. Thomas's Hospital and the 3 major Portsmouth hospitals, commencing 12th April, 1954. It is intended that the successful candidate will work at Portsmouth until 1st January, 1955, and afterwards at St. Thomas's.

Applications (5 copies), including names and addresses of 2 referees, to the Clerk of the Governors, St. Thomas's Hospital, London, S.E.1, by 20th March, 1954.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for 2 posts of CASUALTY OFFICER (House Officer grade), with some duties either in the E.N.T. or the Ophthalmological Department. Posts recognised for F.R.C.S.

Applications to be sent to the Hospital Secretary by 20th March, 1954.

ST. THOMAS'S HOSPITAL, London, S.E.1. Surgical REGISTRAR with principal duties in Casualty Department, for a period of 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 20th March, 1954.

ST. NICHOLAS HOSPITAL, Plumstead, London, S.E.18. CASUALTY OFFICER (recognised for F.R.C.S.), vacant now. 6 months appointment. Salary £450 p.a., less £100 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. SENIOR HOUSE OFFICER (general surgery and orthopædics), vacant now. Recognised for F.R.C.S. 6-month appointment in the first instance. Salary £670 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Women medical practitioners for the appointment of RESIDENT MEDICAL OFFICER, to become vacant on 19th May, 1954. The post is of Senior House Officer status and the appointment will be for a period of 1 year. Duties will include care of the children's ward.

Form of application from the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE PHYSICIAN vacant on 18th May, 1954. The appointment will be for a period of 6 months.

Forms of application from the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Women practitioners for the post of Part-time NON-RESIDENT CASUALTY OFFICER to attend every morning. Salary 6/11ths of the House Officer's rate. The appointment is for 6 months commencing 20th May, 1954.

For form of application apply to the Secretary at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of OBSTETRIC HOUSE SURGEON. Post recognised for the M.R.C.O.G. Appointment is for a period of 6 months and is vacant 16th May, 1954.

Forms of application from the Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of HOUSE SURGEON, vacant in May, 1954. The appointment is for a period of 6 months.

Form of application from the Secretary at the Hospital.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time SENIOR REGISTRAR in Pathology to fill a vacancy in the approved trainee establishment at the Lewisham Group of hospitals. The Lewisham Group Laboratory is linked with other laboratories in South East London and duties will include work for other groups, particularly the Woolwich Group of hospitals. Candidates should have had general experience in pathology and possession of a higher qualification would be an advantage. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 3 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 20th March, 1954.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified Senior Registrars for the appointment of Whole-time SENIOR REGISTRAR to the Obstetric and Gynæcological Department (transitional appointment) for a period of 1 year from 27th March, 1954, for which the present holder is competing.

Applications, stating nationality, date of birth, permanent address, qualifications, with dates and details of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 13th March, 1954.

ST. GEORGE'S HOSPITAL, S.W.1, AND SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Joint appointment. SENIOR PATHOLOGICAL REGISTRAR required. Appointment will be made for 4 years, of which at least the first year will be spent at the Royal South Hants Hospital, Southampton, and at least 2 years subsequently at St. George's Hospital, S.W.1. Special interest in morbid anatomy and hæmatology desirable.

Applications, stating date of birth, qualifications, experience, and names of 2 referees, to the House Governor, St. George's Hospital, S.W.1, by 27th March, 1954. Applicants may visit Hospitals by local arrangement.

ST. ANN'S GENERAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Chest Department with other general duties, for a period of 6 months. Post vacant immediately.

Application form from the Secretary, The Tottenham Group Hospital Management Committee, The Green, N.15.

WHITTINGTON HOSPITAL, London, N.19. North West METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR required in the Physical Medicine Department. Vacant 1st April, 1954. The post affords wide general experience in all branches of physical medicine and is recognised for Part II of the D.Phys.Med. Hospital may be visited by appointment with the Medical Superintendent.

Application forms obtainable from and returnable to Group Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6, within 10 days.

WEST END HOSPITAL FOR NERVOUS DISEASES. SENIOR HOUSE OFFICER (Neurosurgical Assistant) required for the West End Unit housed at St. Charles' Hospital, Ladbroke-grove, W.10. Residence optional. Candidates should have had surgical experience; previous neurological or neurosurgical experience an advantage.

Applications, stating age, qualifications, experience, together with the names and addresses of 3 referees, to reach the Hospital Secretary, 73, Welbeck-street, W.1, by 15th March.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). 2 posts vacant 1st May at Memorial Hospital, Woolwich, and at St. Nicholas Hospital, Plumstead. Recognised for F.F.A.R.C.S. and D.A. 6 months appointments and may then be renewed. Salary £670 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE, AYLESBURY, BUCKS. Applications are invited for the following appointments:—

Stoke Mandeville Hospital

JUNIOR HOSPITAL MEDICAL OFFICER for National Spinal Injuries Centre. Neurological or surgical experience desirable.

Applications, with copies of 2 recent testimonials, to the Administrative Officer.

Tindal General Hospital

HOUSE SURGEON (Male or Female), pre-registration post, but registered practitioners invited to apply. The post offers wide experience of general surgery with operative practice, and is recognised for F.R.C.S. Vacant 1st April. The acute Surgical Unit consists of 95 Beds. No casualty department.

HOUSE SURGEON (E.N.T.), Male or Female, vacant now. New department with high turnover and 4 outpatient clinics weekly. Recognised for D.L.O. and F.R.C.S. No casualty department. Applications for a locum appointment also invited.

Please apply, with 2 testimonials, to the Administrative Officer as soon as possible.

St. John's Hospital (Psychiatric), Stone, near Aylesbury, Bucks

JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). Salary £700–£50–£1000 p.a., less a charge of £140 p.a. for board, lodging and laundry, if resident. Accommodation for married man available if required.

Applications, stating age, qualifications, and experience, together with the names of 3 referees, to the Physician-Superintendent within 2 weeks of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE, require RESIDENT SENIOR HOUSE OFFICER (Male) for Pathological Laboratory. Previous clinical experience essential but pathological experience not essential. Post vacant 15th April, 1954.

Applications, stating age, qualifications, previous experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital as soon as possible.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Male) required at above Hospital for Traumatic and Orthopædic Unit. 6 months appointment, vacant 25th April, 1954. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Special Departments (E.N.T., pædiatric, ophthalmology, &c.). 6 months appointment, vacant on 27th April, 1954.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ABERGELE SANATORIUM, North Wales. (245 Beds— 57 adult pulmonary, 188 children, pulmonary and non-pulmonary. Sanatorium contains a major Thoracic Surgery Unit.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Male or Female) required at the above Sanatorium.

Applications to be sent to Group Secretary, "Rhianfa," Russell-road, Rhyl, within 14 days of the publication of this advertisement.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) HOUSE SURGEON (not pre-registration). Post vacant immediately.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from newly qualified medical practitioners seeking pre-registration posts under the Medical Act, 1950, for the resident post of HOUSE SURGEON at the above Hospital. Busy General Hospital. Salary on national scale less deduction for board and lodging.

Applications, with 2 testimonials, to the Group Secretary, Mid-Wales Hospital Management Committee, General Hospital, Aberystwyth, immediately.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital is recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER at the above Hospital.

Full particulars, stating age, qualifications and experience, should be addressed to—

J. PRICE THOMAS, Secretary,
Mid-Wales Hospital Management Committee.
General Hospital, Aberystwyth.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for post of HOUSE SURGEON (orthopædic and traumatic) at above Hospital. The post offers opportunity not only in traumatic surgery but in "cold" orthopædics and the specialised field of arthritic surgery. The post is recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to undersigned as soon as possible.

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH (near). WINSLEY CHEST HOSPITAL. Applica-tions are invited from registered medical practitioners for post of HOUSE PHYSICIAN (Senior House Officer grade) at above Hospital. The Hospital overlooks the Limpley Stoke Valley about 7 miles from Bath and is served by a regular bus service.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to—

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ROYAL UNITED HOSPITAL. Applications are invited from medical practitioners for post of HOUSE SURGEON (gynæcology and obstetrics) at above Hospital. Approximate commencing date 17th April.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to undersigned as soon as possible.

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from medical practitioners for the posts of HOUSE PHYSICIAN at the Royal United Hospital (vacant approximately 30th April) and St. Martin's Hospital (vacant approximately 19th April).

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to undersigned as soon as possible. J. LAWRENCE MEARS, Secretary.
Manor Hospital, Bath.

BEDFORD GENERAL HOSPITAL. (439 Beds.) RESIDENT HOUSE SURGEONS required towards end of March (2 pre-registration (1 vacant immediately) and 1 post-registration). The appointments offer exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, appointment for which applying, together with copies of 2 testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, as soon as possible.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of SENIOR HOUSE PHYSICIAN at the North Lonsdale Hospital, Barrow-in-Furness. National conditions and salary scale.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEXHILL HOSPITAL, Bexhill, Sussex. (62 Beds.) 2 HOUSE SURGEONS. Posts now vacant. A small modern hospital on the South Coast, considerable acute surgical work and busy Outpatient Department, excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BIRMINGHAM (SELLY OAK) HOSPITAL MANAGE-MENT COMMITTEE. SURGICAL REGISTRAR. Duties in Burns Unit at Birmingham Accident Hospital (209 Beds). Experience in general surgery essential. Experience in plastic surgery and possession of higher surgical qualification an advantage.

Application forms from Group Secretary, Oak Tree-lane, Birmingham, 29, to be returned before 23rd March, 1954. Candidates may visit Hospital.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILI-TATION CENTRE, Bath-row, BIRMINGHAM, 15. (215 Beds.) HOUSE SURGEONS (Male or Female). Posts vacant immediately, March and April. Recognised for F.R.C.S. The appointments will be for a period of 6 months, of which 2 may be spent in the Burns Unit (Medical Research Council). The Hospital is the largest Traumatic Unit in the country, and treats 50,000 new patients each year. Posts are open to registered practitioners and offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILI-TATION CENTRE, Bath-row, BIRMINGHAM, 15. Applications are invited from registered practitioners for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) vacant 1st April, 1954. The Hospital is the largest Traumatic Unit in the country, and treats 50,000 new patients each year. The post offers ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff. Salary at the rate of £670 p.a., less £140 p.a. in respect of emoluments.

Applications, accompanied by copies of recent testimonials or names of 2 referees, to the Administrator.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar) vacant on 1st April, 1954, for 1 year. Candidates should have held house appointments and had surgical experience. Preference will be given to applicants who hold a higher qualification. Deduction of £135 from salary for residential emoluments.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 24th March, 1954.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. Applications are invited from registered practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for duty with the Professorial Unit, vacant 1st April, 1954. The appointment is recognised for the M.R.C.O.G.

Application form obtainable from the House Governor at the above address, to be returned not later than 13th March, 1954. G. A. PHALP, Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade) for duties within the Teaching Group, and resident at the General Hospital or at the Queen Elizabeth Hospital. The post will be vacant on 1st April, 1954, and tenable for 1 year. The appointment is recognised for the purpose of taking the F.F.A.R.C.S. examination.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT REGISTRAR in Anæsthetics, vacant 1st April and tenable for 1 year in the first instance. Preference will be given to candidates who have passed Part I, D.A., or primary F.F.A.R.C.S.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of NON-RESIDENT SENIOR HOUSE OFFICER for duty in the Casualty Department at the General Hospital, Birmingham. The post will be vacant on 1st April and is tenable for 1 year. Candidates must be registered medical practitioners, and have held a resident appointment.

Forms of application may be obtained from, and should be returned as soon as possible to the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Coventry Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry

Whole-time ORTHOPÆDIC REGISTRAR (36 Beds) at Hospital of St. Cross, Rugby (164 Beds). Experience in specialty desirable. Single accommodation available.

(2) Dudley, Stourbridge and District Group of hospitals, Guest Hospital, Dudley

REGISTRAR in General Medicine. Duties at Wordsley Hospital (478 Beds). Experience specialty essential; higher qualification desirable. Resident. Married accommodation available.

(3) Shrewsbury Group of hospitals, Royal Salop Infirmary, Shrewsbury

RESIDENT SURGICAL REGISTRAR. Duties mainly at Royal Salop Infirmary and Copthorne Hospital (170 surgical beds). Recognised for F.R.C.S. Experience in general surgery desirable. Possession of higher qualification an advantage.

Application forms from Group Secretaries, to be returned before 22nd March, 1954. Candidates may visit hospitals.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE SURGEON (resident) required.

Detailed applications, accompanied by 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE SKIN HOSPITAL, INPATIENT DEPARTMENT, George-road, BIRMINGHAM, 15. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience. Inpatient Department is modern and well equipped, providing facilities for study of skin diseases. Successful applicant will be required to assist Consultant at outpatient clinics.

Applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (anæsthetics) required. Resident post. Married quarters available if desired. Duties mainly at Blackburn Royal Infirmary with sessions at Accrington Victoria Hospital and Queen's Park Hospital, Blackburn, as arranged by Consultant in charge. Post recognised for D.A. and F.F.A.R.C.S.

Write to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn, for application form.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. Applications invited from registered practitioners for post of HOUSE OFFICER (obstetrics), Male or Female (first, second or third post held), to commence 1st May, 1954, for period of 6 months. Duties in connection with Obstetric Department, Neonatal Nursery and Paediatric Ward of 24 Beds. Salary £350–£450 p.a., less £100 in respect of resident facilities provided.

Applications, stating nationality, age, qualifications and experience, with copies of recent testimonials or names of referees, to Hospital Secretary as soon as possible.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical, and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a. residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) SENIOR HOUSE OFFICER (anæsthetics). Recognised for D.A. and F.F.A.R.C.S. Resident. This is a busy general hospital (opened 1937) and the post offers excellent opportunities for experience under Consultant Anæsthetists.

Applications, with references or names of referees, to the Hospital Secretary.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of HOUSE OFFICER (orthopædic surgery). (First, second, or third post.) Post tenable for 6 months and is recognised under F.R.C.S. regulations. Salary in accordance with the terms of service issued by the Ministry of Health, plus £50 p.a.

Applications with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRADFORD. ST. LUKE'S MATERNITY HOSPITAL. HOUSE OFFICER (obstetrics/gynæcology), vacant 23rd April. Recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. House Officer (anæsthetics), vacant now. Recognised for D.A. and F.F.A. R.C.S. Opportunities for plastic and intrathoracic experience. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. Senior House OFFICER (general medicine and clinical pathology), vacant 1st May. Salary £670 p.a., less £130 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmology), vacant 1st April. Recognised for D.O.M.S. and F.R.C.S. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY.

HOUSE SURGEON (general and urology), vacant now. Recognised for F.R.C.S. and pre-registration purposes.

HOUSE OFFICER (anæsthetics), vacant 28th April. Recognised for D.A. and F.F.A.R.C.S. Opportunities for plastic and intra-thoracic experience.

Salary for either of above posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, experience, qualifications, and nationality, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY.

SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications for either of above posts, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD. CHILDREN'S HOSPITAL. (102 Beds.) HOUSE OFFICER (Female), vacant now. Salary £350–£450 p.a., less £100 p.a. residential emoluments. Recognised for D.C.H.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (519 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the regional Neurosurgery Department. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical), Rossendale General Hospital. (Resident or non-resident.)

Applications, giving names of 2 referees, should be made to—

H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (150 Beds.) PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE. SENIOR HOUSE OFFICER (resident) in Plastic Surgery required. Previous experience not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and post provides extensive experience. Salary £670, less £150 emoluments.

Write, quoting names of 2 referees, to Group Secretary, 64, Cardiff-road, Newport, Mon.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (1 of 2) for duties in the E.N.T. Department of the Group Hospitals (78 Beds). Vacant end of March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, &c., together with the names and addresses of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty) which becomes vacant early in April. Salary £670 p.a. Recognised for the F.R.C.S.

Applications to be sent to the Hospital Secretary at the above Hospital.

CAERPHILLY HOSPITAL. (Married quarters. 144 Beds for general surgery, orthopædics, E.N.T., ophthalmology and gynæcology; 26 Beds for general medicine.) 2 SENIOR HOUSE OFFICERS and 1 HOUSE SURGEON (pre-registration if suitable candidate available) required. Hospital situated near Cardiff in pleasant surroundings.

Apply to Secretary, Hospital Management Committee, Caerphilly, near Cardiff.

CARDIFF. ST. DAVID'S HOSPITAL. (656 Beds.) Cardiff HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (obstetrics) required in Maternity Department (118 Beds) commencing 9th April, 1954.

Apply, in writing to Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ST. DAVID'S HOSPITAL. (656 Beds.) Cardiff HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER required on 9th April, 1954, in acute medical wards to work under direction of Consultants.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. GLAN ELY HOSPITAL, Fairwater. Cardiff HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident) required at the above Hospital (240 Beds) for treatment of pulmonary (Thoracic Unit) and all forms of non-pulmonary tuberculosis.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER to the Obstetric and Gynæcological Department (108 obstetric and 30 gynæcological beds), vacant mid-May. Post recognised for M.R.C.O.G.

Applications, stating age, qualifications, and experience, with copies of recent testimonials and the names and addresses of 2 referees, should be sent to the Group Secretary, St. Helier Hospital, by 17th March.

CARSHALTON, SURREY. ST. HELIER HOSPITAL, Wrythe-lane. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered and provisionally registered medical practitioners for the post of HOUSE SURGEON.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, should be sent immediately to the Group Secretary at above address.

CHATHAM. ALL SAINTS' HOSPITAL. Medway and GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in General Medicine required 1st April. Appointment will be for 12 months and successful candidate will be required to do duty at other hospitals in Group if necessary. Salary £670 p.a., less £150 for residential emoluments.

Applications, giving full details with copies of 3 recent testimonials, to be addressed to Hospital Secretary.

COVENTRY GROUP 20 HOSPITAL MANAGEMENT COMMITTEE.

Coventry and Warwickshire Hospital (346 Beds)

SENIOR HOUSE OFFICER or HOUSE OFFICER (fracture and orthopædic) for casualty duties. Recognised for F.R.C.S. and pre-registration.

Coventry Hospitals

RESIDENT SENIOR HOUSE OFFICER in Anæsthetics, vacant now. Salary £670 p.a. Recognised for F.F.A.R.C.S. Excellent experience in all types of general anæsthetics. Duties at Coventry and Warwickshire Hospital and Gulson Hospital.

Nuneaton Manor Hospital (139 Beds)

HOUSE SURGEON for general surgical duties (including E.N.T. and ophthalmic). Recognised for F.R.C.S. and pre-registration.

SENIOR HOUSE OFFICER (traumatic and orthopædic). Orthopædic Unit (60 Beds). Salary £670 p.a. Vacant now. Furnished flat available. Recognised for F.R.C.S.

Rugby. Hospital of St. Cross (168 Beds)

HOUSE SURGEON for general and orthopædic duties required immediately. Post recognised for F.R.C.S. and approved for Pre-registration Service.

Applications to Group Secretary, Stoney Stanton-road, Coventry.

CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from Male or Female practitioners for the appointment of SENIOR HOUSE OFFICER ANÆSTHETIST, which will be vacant on 1st April, 1954. Salary £670 p.a.

Apply, with references and full details, to the undersigned forthwith. STANLEY T. DAVIS, Group Secretary.

General Hospital, Cheltenham.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of SENIOR HOUSE OFFICER to Casualty and E.N.T. Departments at the above Hospital. Post tenable for 6 months or 1 year. Recognised for F.R.C.S. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER. ST. MARY'S HOSPITAL, 14, Pope's-lane. Applications invited for post of SENIOR HOUSE OFFICER (medical) for duties at St. Mary's Hospital Geriatric Unit and at Essex County Hospital (general medical). Post tenable for 6 months or 1 year, resident or non-resident. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CHESTER-LE-STREET. GENERAL HOSPITAL. (207 Beds.) DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER in General Surgery, which is now vacant at the above Hospital.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Group Secretary, Durham Hospital Management Committee, Dryburn Hospital, Durham, as soon as possible.

CHESTERFIELD HOSPITAL MANAGEMENT COM-MITTEE. Whole-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients), and Scarsdale Hospital, Chesterfield. Salary £700–£50–£1000 p.a.

Apply M. H. BOONE, Secretary, from whom further particulars may be obtained.

CHESTER. DEVA HOSPITAL (Mental), Liverpool-road. PSYCHIATRIC JUNIOR HOSPITAL MEDICAL OFFICER wanted. Salary £700–£50–£1000 p.a. Accommodation available for single person. All forms of modern treatment available, including Insulin Unit. There are psychiatric outpatient clinics at 3 general hospitals, occupational therapy units, and voluntary treatment wards. Facilities given to study for higher qualifications.

Apply Medical Superintendent.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer), resident. The post is recognised for the F.R.C.S. It offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off-duty time is generous and the post is one likely to suit an officer seeking a higher qualification in surgery or one intending General Practice. The vacancy will occur on 20th March. Salary £670 p.a., with £130 deducted for residential emoluments.

Apply Secretary, Chelmsford Hospital Management Committee, Chelmsford and Essex Hospital, Chelmsford.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident), which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith. G. W. BECKWITH, Group Secretary.

DENBIGH. NORTH WALES HOSPITAL FOR NER-VOUS AND MENTAL DISORDERS. SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER required. The Hospital has modern treatment facilities, and together with its associated Adult and Child Guidance Clinics is recognised by the R.M.P.A. for the purpose of their D.P.M. examination.

Applications with names of 2 referees to the Medical Superintendent.

S. L. FROST, Secretary to the Management Committee.

DEWSBURY. THE GENERAL HOSPITAL. (119 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgery and casualty). Salary £670 p.a., less deduction for board, lodging, &c.

Applications, stating age, qualifications, details of present and previous appointments, together with the names of 2 referees, should be sent immediately to the Administrative Officer, The General Hospital, Dewsbury, Yorks.

DONCASTER. ROYAL INFIRMARY. (330 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th March, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUNFERMLINE AND WEST FIFE HOSPITAL. (115 Beds—General Surgical.) WEST FIFE HOSPITALS BOARD OF MANAGEMENT invite applications from suitably qualified medical practitioners (Male or Female) for the post of SENIOR HOSPITAL OFFICER to the above Hospital. Salary and conditions of service in accordance with national agreements. Superannuable under National Health Service superannuation regulations. Appointment will be temporary, 6 months in first instance, and successful candidate will be required to take up duty immediately.

Apply to Surgeon-Superintendent, Reid-street, Dunfermline.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST at this busy Hospital, which has been approved for Pre-registration Service. The post, which becomes vacant at the end of March, 1954, offers varied experience in pleasant surroundings. 4 residents on the staff, salary at the rate of £350, £400, or £450 a year, according to experience. A deduction of £100 a year made in respect of residential emoluments. Duties may include acting in the medical wards or casualty. Appointment for 6 months in first instance.

Applications, stating full details, with copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas, Isle of Man.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING. RESIDENT SENIOR HOUSE OFFICER (obstetrics and gynæcology) for 1-year appointment (renewable). Post recognised for D.Obst.R.C.O.G.

Apply Medical Superintendent.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (non-resident), required in the Casualty Department at above Hospital.

Apply, stating age, nationality, qualifications and experience, together with names and addresses of 2 referees, to Group Secretary, Edgware General Hospital by 20th March, 1954.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 28th March and 10th April, 1954. Salary £350–£450 p.a., according to experience. Posts recognised for M.R.C.O.G. purposes. Deduction of £100 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 13th March, 1954. Candidates selected for interview will be notified by 20th March, 1954.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Appointment of House Officers. Applications are invited for the following appointments :—

Cumberland Infirmary, Carlisle (340 Beds)

*2 HOUSE OFFICERS (general surgery).
1 HOUSE OFFICER ("Specials"—E.N.T. and Eyes).
1 SENIOR HOUSE OFFICER (orthopædics).

*Pre-registration candidates are eligible to apply.

Applications, with names of 2 referees, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

EPSOM, SURREY. WEST PARK HOSPITAL (for all stages of nervous and mental disorders). **WEST PARK HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited for 3 appointments of REGISTRAR in Psychiatry at above Hospital. Candidates may be of either sex. Single residential quarters are available.

Applications (5 copies) should be made on forms to be obtained from the Secretary to the Hospital Management Committee at the Hospital, to whom they should be returned not later than 12th March.

EPSOM, SURREY. THE MANOR. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (resident or non-resident), Male or Female. Valuable experience provided in the diagnosis, care and training of cases of all forms of mental defectiveness but with particular reference to the social and industrial rehabilitation of high-grade morons. Research in this field of practice is active at the hospital which is recognised for a period of 12 of the 24 months stipulated in the D.P.M. regulations of the (Conjoint) Examining Board for the D.P.M.

Applications, stating age, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Physician-Superintendent as soon as possible.

EPPING GROUP HOSPITAL MANAGEMENT COMMITTEE. ST. MARGARET'S HOSPITAL, EPPING (485 Beds), **AND HONEY LANE HOSPITAL, WALTHAM ABBEY** (118 Beds). Applications are invited for the posts of post-registration HOUSE PHYSICIAN at each of the above Hospitals. Salary in accordance with national scale, less a deduction at the rate of £100 p.a. for board, lodging, &c. The successful candidates will be required to reside for 3 months at each Hospital and will be expected to take up their appointments on approximately 16th March, 1954.

Applications, with copies of 2 recent testimonials, to the Group Secretary, St. Margaret's Hospital, Epping, Essex, immediately.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the post of HOUSE SURGEON, vacant 13th April, 1954. The post is also open to pre-registration candidates.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary, by 13th March, 1954.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the post of HOUSE PHYSICIAN, vacant 6th May, 1954. The post is also open to pre-registration candidates.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary, by 13th March, 1954.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER required in the Department of Anæsthesia, vacant 23rd March, 1954. Post recognised for the D.A. and F.F.A.R.C.S. 12 months appointment.

Applications, giving the names and addresses of 2 referees, to the Secretary of the Management Committee.

FAREHAM, HAMPSHIRE. KNOWLE HOSPITAL. Applications are invited for the post of Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER, which may lead to a permanent appointment in this grade at the above Mental Hospital, where all forms of modern psychiatric treatment are undertaken. Terms and conditions of service as approved for hospital medical staff employed in the National Health Service (remuneration £16 per week). Single residential accommodation is available, but officers who so desire may live outside the Hospital.

Applications should be sent to the Physician-Superintendent.

M. WALSH, Group Secretary,
Knowle Hospital Management Committee.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) ORTHOPÆDIC SENIOR HOUSE OFFICER required immediately for 6 months. Deduction for residence £150.

Apply, stating age, qualifications with dates, experience, and naming 3 referees, to the Administrative Officer.

GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT ANÆSTHETIST (Junior Hospital Medical Officer grade) with duties at Llanelly General and Amman Valley Hospitals. Salary £700–£50–£1000 p.a.

Applications, with full details of experience, qualifications and age, together with the names of 2 referees, should be sent to the Hospital Secretary, Llanelly Hospital, Llanelly, Carms.

O. C. HOWELLS, Group Secretary.

GLASGOW, N. STOBHILL GENERAL HOSPITAL PSYCHIATRIC UNIT. HOUSE OFFICERS (resident), Male or Female, required now. 180 Beds, 1200 admissions yearly, acute treatable cases. Unit recognised for D.P.M.

Apply to Medical Superintendent.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL. 2 JUNIOR HOSPITAL MEDICAL OFFICERS (resident) required for the Medical Pædiatric Units of the above Hospital. National Health Service salary and conditions of service.

Applications, stating age and giving full details of qualifications and experience, with the names of 3 referees, to be lodged with the Secretary of the Board of Management for Glasgow and District Children's Hospitals, 86, St. Vincent-street, Glasgow, C.2, by 17th March.

GLASGOW. HAWKHEAD (MENTAL) HOSPITAL, 510, Crookston-road, GLASGOW, S.W.3. Applications are invited for the post of SENIOR HOUSE OFFICER in Psychiatry (Male or Female), resident or non-resident. The post offers wide experience and training in all aspects of psychiatry (inpatient and outpatient), and all modern methods of treatment are carried out. Recognised for D.P.M.(Eng.).

Applications, together with the names of 2 referees, should be forwarded as soon as possible to the Physician-Superintendent at above address.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (orthopædics) required. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th March, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for Orthopædic, Fracture and Accident Service. Previous surgical and orthopædic experience would be an advantage. Locum would be considered.

Applications should be sent immediately to the Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcological), Male or Female, for duties at the above-named Hospital and Scartho Road Infirmary, Grimsby.

Applications, with the names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post, tenable for 1 year, of SENIOR HOUSE PHYSICIAN. The Hospital has a well-equipped library.

Applications, together with the names of 2 referees, should be sent to the Hospital Secretary, Grimsby General Hospital, Grimsby, Lincs.

GRIMSBY MATERNITY HOSPITAL. (51 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. SENIOR OBSTETRIC HOUSE OFFICER (resident) required for above Hospital. Post vacant 5th April. Large proportion of abnormal cases treated.

Apply immediately, quoting 2 referees, to Secretary, 3, Queens-parade, Grimsby.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) RESIDENT SENIOR HOUSE OFFICER for Anæsthetics required. The starting-date has not been fixed, but will probably be mid-April. Operations in main theatres totalled 4367 in 1953 and there is a large Casualty Department.

Apply, with full details of experience and copies of 3 testimonials, to Hospital Secretary.

HADDINGTON, EAST LOTHIAN. ROODLANDS GENERAL HOSPITAL. RESIDENT HOUSE PHYSICIAN required for 1st April, 1954. Registered or pre-registration candidates may apply. Small but expanding general hospital with busy Outpatient and X-ray Departments. The post offers wide and valuable experience.

Applications, giving age, sex, nationality, qualifications and the names of 2 referees, to Secretary, East Lothian Hospitals Group Board of Management, 31, Court-street, Haddington.

HADDINGTON, EAST LOTHIAN. ROODLANDS GENERAL HOSPITAL. RESIDENT HOUSE SURGEON required for 1st April, 1954. Registered or pre-registration candidates may apply. Small but expanding general hospital with busy Outpatient and X-ray Departments. The post offers wide and valuable experience.

Applications, giving age, sex, nationality, qualifications and the names of 2 referees, to Secretary, East Lothian Hospitals Group Board of Management, 31, Court-street, Haddington.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Resident, Male or Female. Post not pre-registraton, vacant now. National scale of salary.

Apply to Hospital Administrator.

HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum RESIDENT SURGICAL OFFICER required immediately. Salary £16 weekly.

Apply to Group Secretary, 11, Holmesdale-gardens, Hastings. Phone 5400.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) OBSTETRIC HOUSE SURGEON required. Post vacant 31st March. Approved pre-registration appointment and recognised for D.Obst.R.C.O.G.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) HOUSE SURGEON required. Post vacant 26th March. Approved pre-registration appointment.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery required. Duties include work in the Casualty Department. Post recognised for F.R.C.S., vacant now. Salary £670 p.a., with deduction of £130 p.a. for residence, &c.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (medical) for duties at the Royal Bath Hospital and White Hart Hospital, Harrogate, to be resident at the Royal Bath Hospital. The White Hart Hospital is an up-to-date hospital for the treatment of rheumatism and post-operative orthopædic cases. The Royal Bath Hospital is recognised as having an authorised Physical Medicine Department, and time spent in this post will afford experience in physical medicine and will count towards the qualifying 12 months for the Diploma in Physical Medicine. Salary £670 p.a., subject to a deduction of £140 p.a. in respect of board and lodging. The appointment will be subject to the National Health Service superannuation regulations.

Applications to be forwarded to the Hospital Secretary, Royal Bath Hospital, Harrogate.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR (full-time) required to undertake duties in the Harefield and Northwood Group of hospitals, and 3 sessions weekly at St. Vincent's Orthopædic Hospital, Northwood Hills. Accommodation available if required. Hospitals may be visited by appointment.

Application forms obtainable from and returnable to the Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, immediately.

HAROLD WOOD HOSPITAL, Harold Wood, Essex. (421 Beds. Recognised for D.A.) REGISTRAR (resident) anæsthetics, required from 1st March. Whole-time post, initial period of 6 months, at main general and casualty hospital in Brentwood Group. £775, less £130 p.a. board and lodging.

Apply to Group Secretary (Brentwood 2563).

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general, gynæcology, and obstetrics) first or second post. To commence immediately. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Applications are invited for the post of RESIDENT HOUSE SURGEON at the North Herts Hospital. (This is not a pre-registration post.) Vacant 1st April, 1954.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Director, Lister Hospital, Hitchin, Herts.

HOUNSLOW GENERAL HOSPITAL. (81 Beds.) Applications are invited for the appointment of CASUALTY OFFICER (resident). Senior House Officer grade, post now vacant. Salary £670 p.a., less £140 for residence, &c.

Applications, stating age, qualifications, experience, with copies of 3 recent testimonials or names for reference, to Hospital Secretary, Hounslow Hospital, Staines-road, Hounslow, Middlesex.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 HOUSE SURGEON posts. 1 is now vacant; the other at the end of March. 6-monthly term in each case. Both count toward D.C.H. qualification. Salary according to national scale.

Replies, with testimonials, to be sent to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE OFFICER required for Obstetrics and Gynæcology Departments.

Applications, stating age, nationality, qualifications obtained, with copies of up to 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 16th March, 1954.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

KENDAL. WESTMORLAND COUNTY HOSPITAL. (82 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgical). The successful applicant will work with a Consultant Surgical Unit and attend at Consultative Clinics. The post is vacant March and normally tenable for 1 year.

Applications, with names of 2 referees, to be addressed to the Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment, which is recognised for the Diploma in Anæsthetics, will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD AREA. Medical ACT, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration House posts will be available for the 6 months commencing 1st May, 1954, in the following hospitals approved under the Medical Act, 1950. Preference will be given to pre-registration candidates, but applications will also be accepted from practitioners registered before 1st January, 1953.

Scarborough Hospital (191 Beds)
1 General Surgical.
1 Surgical (general surgery, orthopædic and E.N.T.).

County Hospital, York (222 Beds)
2 Surgical (general surgery and gynæcology). (Recognised for F.R.C.S.)
1 Medical.

Hull Royal Infirmary and Sutton (242 Beds)
1 Surgical (general surgery and gynæcology). (Recognised for F.R.C.S.)

Kingston General Hospital, Hull (398 Beds)
1 Surgical (general surgery, gynæcology and orthopædic).

Victoria Children's Hospital, Hull (143 Beds)
(All posts recognised for D.C.H.)
1 General Surgical.
1 Surgical (general surgery and orthopædic).

Westwood Hospital, Beverley (202 Beds)
1 Surgical (orthopædic). (Recognised for F.R.C.S.)
1 Medical.

East Riding General, Driffield (249 Beds)
1 Medical.

Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery, orthopædic and gynæcology). (Recognised for F.R.C.S.)
1 Medical (general medical, pædiatric and ophthalmology).
1 Mixed (general medical, general surgery and dermatology).
1 Surgical (orthopædic, E.N.T. and general surgery). (Recognised for F.R.C.S.)

General Hospital, Wakefield (158 Beds)
1 Medical (general medical and pædiatric). (Recognised for D.C.H.)

Pinderfields General, Wakefield (663 Beds)
1 General Surgical.
1 Medical.
1 Medical (neurology).

General Hospital, Batley (99 Beds)
1 Surgical (orthopædic and ophthalmology).

General Hospital, Dewsbury (119 Beds)
1 Medical (general medical, pædiatric and dermatology).

Staincliffe General, Dewsbury (314 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).

Huddersfield Royal Infirmary (304 Beds)
1 General Surgical. (Recognised for F.R.C.S.)
1 Surgical (midwifery and gynæcology). (Recognised by R.C.O.G.)

Royal Halifax Infirmary (301 Beds)
1 Surgical (ophthalmology and E.N.T.).
2 Medical.

Halifax General Hospital (425 Beds)
1 Medical.
1 Midwifery. (Recognised by R.C.O.G.)

Bradford Royal Infirmary (507 Beds)
1 Surgical (general surgery and urology). (Recognised for F.R.C.S.)
1 Surgical (orthopædic and casualty). (Recognised for F.R.C.S.)
1 Medical.

St. Luke's Hospital, Bradford (828 Beds)
1 Medical.

Keighley Victoria Hospital (144 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.). (Recognised for F.R.C.S.)

General Hospital, Otley (170 Beds)
1 Medical (general medical and pædiatric).

St. James's Hospital, Leeds (1539 Beds)
3 General Surgical. (Recognised for F.R.C.S.)
1 Surgical (gynæcology). (Recognised by R.C.O.G.)
7 Medical.
1 Medical (geriatric).
1 Medical (pædiatric).
1 Medical (dermatology).

Seacroft Hospital, Leeds (60 pædiatric beds)
2 Medical (pædiatric).

Harrogate and District General (249 Beds)
2 General Surgical. (Recognised for F.R.C.S.)

Candidates should express, where applicable, their preference for medical, surgical or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, or from the Dean, The School of Medicine, Thoresby-place, Leeds, 2, and should be returned to either of the above-named as soon as possible. Application may be made in advance of results of final examination.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

General Medicine

Halifax Group (non-resident). Duties divided between general medical and geriatrics (110 general medical, 380 geriatric beds).

General Surgery

(*a*) Keighley and District Victoria Hospital (55 general surgical beds) (preferably resident).

(*b*) Clayton Hospital, Wakefield (75 general surgical beds). Duties are those of Resident Surgical Officer. (Recognised for F.R.C.S.)

(*c*) Otley General Hospital (resident) (50 surgical beds). Consultant staff mainly from Leeds Teaching Hospitals. Appointment includes 2 sessions clinical work at the General Infirmary at Leeds.

Infectious Diseases

Castle Hill Hospital, Cottingham, E. Yorks. (208 I.D. beds) (resident).

Orthopædic Surgery

(*a*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (34 orthopædic beds) (non-resident).

(*b*) The General Hospital, Batley (36 orthopædic beds) and other hospitals in the Dewsbury, Batley and Mirfield Group (resident).

(*c*) Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

(*d*) Halifax Royal Infirmary (approximately 60 orthopædic beds) and at other hospitals in the Halifax Group (preferably resident).

(*e*) Marguerite Hepton Memorial Orthopædic Hospital, Thorp Arch, near Wetherby (75 long-stay children's beds). A 3-bedroomed, partly furnished house is available in the Hospital grounds.

Pædiatrics

(*a*) Huddersfield and Halifax Groups (aggregate of 60 acute pædiatric beds) with additional duties in infectious diseases (preferably resident). Small flat available at Northowram Infectious Diseases Hospital, Halifax.

(*b*) The Victoria Hospital for Sick Children, Hull (150 Beds), and other general hospitals with pædiatric beds in the Hull A and the East Riding Hospital Management Committee Groups (non-resident).

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 12th March, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of REGISTRAR in the Radiotherapy Centre of the General Infirmary at Leeds. The post is non-resident and will be for 1 year in the first instance.

Applications, stating age, qualifications, and full details of previous experience, together with the names of 3 referees, are to be forwarded to the Sub-Dean, School of Medicine, Leeds, 1, not later than 19th March, 1954.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of REGISTRAR in Anæsthetics which will become vacant shortly. The appointment will be for 1 year in the first instance.

Applications, giving full details of previous experience, together with the names of 3 referees, should be forwarded to the Sub-Dean, School of Medicine, Leeds, 1, not later than 26th March, 1954.

LEEDS (near). SCALEBOR PARK HOSPITAL, Burley-IN-WHARFEDALE, near LEEDS. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female) at Scalebor Park, a modern hospital of 323 Beds for the active treatment of nervous and mental disorders. The Hospital is associated for teaching purposes with the Department of Psychiatry of Leeds University and facilities will be granted for attending the D.P.M. Course. The salary is £670 p.a., less £130 for full residential emoluments, or a house will be available for a married man, if required, for which an agreed rental will be payable.

Applications to the Medical Superintendent immediately.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (orthopædics). Salary will be £670 p.a.

Applications, on forms obtainable from the undersigned, should be returned completed within 10 days of the appearance of this advertisement. H. BLYTHE, Group Secretary.

LIVERPOOL. WALTON HOSPITAL. House Surgeons (general surgery). Recognised pre-registration posts, vacant on 1st April, 1954.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to the Physician-Superintendent, Liverpool, 9.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER in the E.N.T. Department of the above Hospital. Salary £700–£50–£1000.

Applications, with full details of experience, qualifications and age, together with the names of 2 referees, should be sent to the Hospital Secretary, Llanelly Hospital, Llanelly, Carms.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Applications invited for post of RESIDENT SENIOR HOUSE OFFICER (Female preferred). Furnished quarters available. Preference to candidates who have held house appointments at general hospitals. Full clinical facilities for study for D.P.M. Outpatient clinics staffed from Hospital.

Applications, stating age, qualifications and experience, with names of 2 referees, to be sent to the Medical Superintendent.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Applications invited for post of RESIDENT or NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). Preference to candidates who have held house appointments at general hospitals. Unfurnished flat or house in hospital grounds available for married applicants if required ; furnished quarters for single persons. Modern methods of investigation and treatment carried out. Outpatient clinics (3) staffed from Hospital.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent to the Medical Superintendent.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgical) to commence as soon as possible. This appointment, in a busy general hospital staffed by Manchester Consultants, affords excellent experience to suitably qualified candidates. Opportunity will be given to assist in the major surgical work of the Hospital. Post recognised under F.R.C.S. regulations. Applications will also be considered for the post of JUNIOR HOUSE OFFICER (surgical).

Full particulars should be forwarded to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds. Recognised under F.R.C.S. regulations.) MANCHESTER REGIONAL HOSPITAL BOARD. NORTH AND MID-CHESHIRE GROUP OF HOSPITALS. Applications are invited for the post of RESIDENT SURGICAL REGISTRAR, to commence duties as soon as possible. This appointment, in a busy general hospital staffed by Manchester Consultants, offers excellent opportunity of practical surgical experience to suitably qualified candidates.

Applications, together with 2 recent testimonials, to be sent to Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire, as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 48 Beds at Park Hospital, Davyhulme. 1-year appointment, renewable. Post now vacant.

Application forms from Secretary, West Manchester Hospital Management Committee, Park Hospital, Davyhulme, Urmston.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE.

Park Hospital, Davyhulme (General Hospital—426 Beds)

1 SENIOR HOUSE OFFICER (anæsthetics). Hospital recognised for training for Diploma in Anæsthetics. Post now vacant.

1 SENIOR HOUSE OFFICER (pædiatrics). Hospital recognised for training for Diploma in Child Health. Vacant 1st May, 1954.

2 HOUSE OFFICERS (general surgery) (pre- or post-registration). Posts recognised for F.R.C.S. examination. Posts now vacant.

1 HOUSE OFFICER (E.N.T.) (pre- or post-registration). Post now vacant.

Eccles and Patricroft Hospital (General Hospital—72 Beds)

1 HOUSE OFFICER (post-registration post). Additional allowance of £50 p.a. Post now vacant. The work of the Hospital is mainly surgical and there is a busy Outpatient Department.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a Maternity Unit operating temporarily in the Whitworth Park Branch of the above-named Hospital, vacant 1st April, 1954. The post is supernumerary to the establishment, recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned no later than 12th March, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MAIDSTONE. MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the Kent County Ophthalmic and Aural Hospital, and the West Kent General Hospital, Maidstone (total beds 248). The post, which is vacant now, is of Senior House Officer grade, and carries a salary of £670 a year, less £150 for residential emoluments. Excellent experience under Consultant Anæsthetists is available, and the post is recognised for the F.F.A.R.C.S. examination.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 suitable referees, should be forwarded to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING-ROOM OFFICER. Post vacant immediately. Salary £670 a year, with deduction of £150 a year for residential emoluments.

Applications to Administrative Officer at Hospital as soon as possible.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for post of CASUALTY OFFICER, vacant 1st March. Post recognised for F.R.C.S. Salary on House Officer scale plus £50 p.a.

Applications, stating age, qualifications, and experience, with copies of testimonials, to Hospital Secretary.

MARKET DRAYTON (near), SHROPSHIRE. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER required (Junior Hospital Medical Officer or Senior House Officer according to experience). The post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) RESIDENT SENIOR HOUSE OFFICER (obstetrics and gynæcology). The post is vacant March and tenable for 1 year. Successful applicant will work with the Specialist Unit, but will be expected to relieve the Senior House Officer (Surgical), during absence.

Applications, with full particulars, to Secretary, Royal Lancaster Infirmary, Lancaster.

NEWMARKET GENERAL HOSPITAL, Newmarket, SUFFOLK. Applications are invited for the post of HOUSE SURGEON, which is immediately vacant. Duties include surgical house charge of general surgical, E.N.T., and eye cases. The post is resident and available for 6 months and is recognised for pre-registration.

Applications, with copies of 3 recent testimonials, should be addressed to the Physician-Superintendent.

NEWCASTLE REGIONAL HOSPITAL BOARD. North WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. (Main Hospital: Shotley Bridge—550 Beds, including 127 surgical beds.) RESIDENT SURGICAL OFFICER, temporary whole-time appointment for 6 months. Salary according to qualifications and experience on £1000–£1300 scale.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, immediately.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Neurosurgical Department). The above post, either resident or non-resident, became vacant on 1st March, 1954. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials by 12th March, 1954.

NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER or SENIOR HOUSE SURGEON (orthopædics). Joint appointment now vacant at Newcastle General Hospital (861 Beds) and the W. J. Sanderson Orthopædic Hospital School for Children (121 Beds). Duties mainly at the latter hospital where resident accommodation is available.

Applications, with copies of 2 recent testimonials, should be sent to the Group Secretary, Newcastle upon Tyne Hospital Management Committee, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Vacancies 1st April, 1954, for the following :—

4 HOUSE OFFICERS (general surgery).

FRACTURE AND ORTHOPÆDIC HOUSE OFFICER.

HOUSE OFFICER (Casualty Department) to work in conjunction with Senior House Officer—casualty.

All recognised for F.R.C.S. and for pre-registration.

SENIOR HOUSE OFFICER (Casualty Department) to work in conjunction with another Senior House Officer—casualty. Recognised for F.R.C.S.

SENIOR HOUSE OFFICER (E.N.T. Department). Recognised for F.R.C.S. and for D.L.O.

All 6-month appointments in first instance. Deduction £100 a year for residential emoluments.

Applications, enclosing copies of 3 testimonials, as soon as possible to S. G. HILL, Superintendent.

NORTH SHIELDS, NORTHUMBERLAND. PRESTON HOSPITAL. (331 Beds.) Applications are invited from practitioners qualified at least 1 year for the resident appointment of SENIOR HOUSE OFFICER (obstetrics and gynæcology) and should be sent with names of 2 referees to the Group Secretary, Preston Hospital, North Shields.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds.) SENIOR HOUSE OFFICER in General Surgery required. The post is based here, but covers work at another hospital also. House Surgeons are engaged at both and the post is of a senior character, providing good experience. Salary £670.

Write, quoting 2 referees, to T. A. JONES.

64, Cardiff-road, Newport, Mon.

NOTTINGHAM. FIRS MATERNITY HOSPITAL. (40 Beds.) Required, RESIDENT SENIOR HOUSE OFFICER (obstetrics), post vacant 18th April, 1954. Recognised for D.Obst.R.C.O.G. Previous experience in obstetrics an advantage.

Applications to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL. Senior HOUSE OFFICER required (non-resident). The successful candidate will, in addition to medical duties, have an opportunity of assisting in the Obstetric Unit. Terms and conditions of service as laid down by the Ministry of Health. This post will be accepted as a general medical appointment for entry to the M.R.C.O.G. examination.

Apply in writing, stating age, qualifications and experience, together with copies of testimonials, to the undersigned as soon as possible. HENRY M. STANLEY, Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) which falls vacant at the beginning of April. The post is tenable for a year or 6 months by agreement.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Hogarth Radio-THERAPY CENTRE. A vacancy exists at the above Centre for a SENIOR HOUSE OFFICER in Radiotherapy or REGISTRAR (if in possession of part I D.M.R.T.) in Radiotherapy. The Centre is recognised as a Training School for both Part I and II D.M.R.(T.) (Royal College of London) in conjunction with the University of Nottingham, and instruction for this examination can be given to those interested and suitable. The position offers excellent experience for persons studying for other postgraduate degrees.

Apply as soon as possible, stating age, qualifications and experience, together with names of 3 referees, to the Group Secretary, General Hospital, Nottingham.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of SENIOR REGISTRAR in Anæsthetics (non-resident) to the Aylesbury Group of hospitals as a member of the area team. The post will be held for 1 year and be eligible for extension to the normal tenure. Candidates should hold the D.A.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 19th March, 1954.

OXFORD. UNIVERSITY OF OXFORD. United Oxford HOSPITALS: OXFORD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners holding a Mastership of Surgery or a F.R.C.S. Diploma for a post of SENIOR REGISTRAR in General Surgery. The first part of the training will be spent in the United Oxford Hospitals and the second part in the hospitals of the Northampton area.

Applications, on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, should reach him by 19th March.

OXFORD. UNITED OXFORD HOSPITALS. Applica-tions invited for post of EMERGENCY OFFICER (for general duties in all departments) with effect from 28th March, 1954. Post can be paid at the rate of £670 p.a. if candidate has suitable qualifications.

Apply, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 12th March, 1954.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOS-PITAL. (With Annexe 122 Beds.) PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service, centring on Mount Gold Orthopædic and associate hospitals. Vacancy immediately.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications are invited from registered medical practitioners for the appointments of :—

(1) HOUSE SURGEON in Obstetrics and Gynæcology, 14th May, 1954, recognised for the Membership of the Royal College of Obstetricians and Gynæcologists. Wide experience can be obtained in obstetrics, including antenatal and postnatal clinics.

(2) SENIOR HOUSE OFFICER in Surgery, Freedom Fields, March, 1954. The Hospital is recognised for the Fellowship of the Royal College of Surgeons.

(3) HOUSE SURGEONS, Greenbank Road, immediately and 20th April, 1954, recognised for the Fellowship of the Royal College of Surgeons.

(4) HOUSE SURGEON, Devonport, 18th May, 1954.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Saint Mary's Hospital

SENIOR HOUSE PHYSICIAN, vacant now. The duties will be mainly in medical wards that form an Admission Unit for 450 geriatric beds in the Group, a Consultant Physician being in charge of this Unit. In addition, the successful candidate will act as Registrar to 20 acute medical beds in the Hospital.

Royal Portsmouth Hospital

SENIOR HOUSE SURGEON (Orthopædic and Casualty Departments), vacant now.

Queen Alexandra Hospital

(124 surgical beds) Recognised for F.R.C.S.

SENIOR HOUSE SURGEON, vacant now.

HOUSE SURGEONS, vacant now and 10th March, 1954. Pre-registration posts.

Infectious Diseases Hospital (310 Beds—Fever and T.B.)

SENIOR HOUSE OFFICER, vacant now.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PONTYPRIDD (near). EAST GLAMORGAN HOS-PITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 177,000. Recognised for D.Obst.R.C.O.G., D.C.H., and D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics).

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of SENIOR HOUSE OFFICER (orthopædic), vacant now. Salary £670 p.a. Exceptional experience offered in busy department.

Apply to the Secretary, Memorial Hospital, Peterborough.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MONMOUTHSHIRE. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required immediately. This is the senior resident post, and resident staff consists of 2 House Surgeons, a House Physician and this post. This is a busy acute general hospital with a good Outpatient Department and regular visits from Consultants. Post offers good practical experience in surgery. Salary £700–£50–£1000, less £150 board-residence.

Write, quoting names of 2 referees, to—

T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

PONTEFRACT. GENERAL INFIRMARY. Pontefract AND CASTLEFORD HOSPITAL MANAGEMENT COMMITTEE (YORKS). RESIDENT SURGICAL OFFICER required. Graded Senior House Officer. Salary £670. 1-year appointment. Recognised for Fellowship. Offers good scope for practical experience. Vacant. Married accommodation available if required.

Applications to Secretary, Gt. Northern House, Salter-row, Pontefract, Yorks.

PORTSLADE. FOREDOWN HOSPITAL. (60 Beds —Infectious Diseases.) JUNIOR HOSPITAL MEDICAL OFFICER (non-resident), post vacant early April, 1954, will include duties at other hospitals in the Group.

Applications, stating age, qualifications, nationality, previous posts held, together with the names of 2 referees, should be sent to the Administrative Officer, c/o Hove General Hospital, Sackville-road, Hove, 3, not later than 20th March, 1954.

READING. BATTLE HOSPITAL. (420 Beds.) Applications are invited from registered and provisionally registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON in the newly opened Area Accident and Orthopædic Department, vacant 1st April, 1954, for a period of 6 months. F.R.C.S. recognised. Also casualty duties.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT ASSISTANT PATHOLOGIST, vacant 1st April, 1954. The appointment is for 6 months and previous experience in pathology is not necessary. £350–£450 p.a., according to experience, less £100 board-residence.

Apply, stating age, qualifications with dates, nationality, and present post with copy of 1 recent testimonial, to Secretary.

RHYL. ROYAL ALEXANDRA HOSPITAL. Clwyd and DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment, as from 1st May, 1954, of HOUSE PHYSICIAN at the above Hospital.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, "Rhianfa," Russell-road, Rhyl, within 14 days from the date of publication of this advertisement.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) SENIOR HOUSE OFFICER for the Regional Poliomyelitis Unit (27 Beds) and in general medicine. Vacant from 1st April, 1954.

Apply to Medical Superintendent.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Applications are invited from medical practitioners of either sex for the appointment of RESIDENT HOUSE OFFICER to the Obstetric and Gynæcological Department. The Hospital has 70 maternity beds, a gynæcological ward of 25 beds, and a Premature Baby Unit of 8 cots. Post vacant 1st April, 1954, and is recognised for the D.Obst.R.C.O.G.

Applications, &c., to be sent to the undersigned by 20th March, 1954.

J. C. FIELD, Secretary.

SCARBOROUGH HOSPITAL. (190 Beds.) Required, SENIOR HOUSE OFFICER (surgical) to commence duty towards the end of April. Terms and conditions of service in accordance with those prescribed for medical and dental staffs. The post will be for a period of 6 months (it is recognised by the Royal College of Surgeons for the F.R.C.S. for that period) or for any longer period which may be mutually agreed. The position is non-resident but there is a flat available near to the Hospital, if required.

Applications, giving age, qualifications, details of present and previous appointments, and the names of 2 referees, should be forwarded to the Hospital Secretary.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (269 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th March, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications are invited for the post of JUNIOR ASSISTANT MEDICAL OFFICER, for which there are 2 vacancies, to the above Sanatoria at a salary of £670 p.a., less a deduction for full residential emoluments. A Thoracic Surgical Unit is situated at the Sanatoria and a large number of major surgical cases are dealt with annually. These posts offer valuable training in the selection of cases for major surgery, and in their pre-operative and post-operative management.

Apply, giving full particulars of qualifications and experience, together with the names of 2 referees, to the Medical Director, Tor-na-Dee, Milltimber, Aberdeenshire, within 10 days of the appearance of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

3 REGISTRARS in Dental Surgery, Glasgow Dental Hospital, for duties in the Orthodontic Department and elsewhere in the Region as may be required.

REGISTRAR in Psychiatry based at Crichton Royal, Dumfries.

REGISTRAR in Psychiatry, Bellsdyke Mental Hospital, Larbert.

REGISTRAR in Thoracic Surgery, Hairmyres Hospital, East Kilbride.

REGISTRAR in Surgery, Stonehouse Hospital.

REGISTRAR in Surgery including duties in orthopædics, Stirling and Clackmannan Hospitals.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies for 1 post or 16 in all for 2), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 23rd March, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for SENIOR HOUSE OFFICERS (Male or Female) to fill 2 posts in the Psychiatry Unit at Stobhill Hospital, Glasgow. The appointments are resident and will be for 1 year in the first instance. The Unit consists of 180 Beds with 1200 admissions yearly and deals with acute treatable cases ; it is recognised for the D.P.M.

Applications, stating age, qualifications, experience, and present appointment and naming 3 referees, to be lodged immediately with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3.

SCOTLAND. NORTH-EASTERN REGIONAL HOS-PITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Diagnostic Radiology—main duties in Aberdeen General Hospitals. Candidates should have experience in their specialty and preferably hold an appropriate higher qualification.

Applications, giving 2 names for reference, should be submitted by 16th March, 1954, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Psychiatry at Craig Dunain Hospital, Inverness.

Forms of application and further particulars are obtainable from the undersigned, with whom applications should be lodged by 22nd March, 1954.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.

Office of the Northern Regional Hospital Board.
Raigmore, Inverness.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. Applications are invited for the post of REGISTRAR in Surgery at Bangour Hospital, Broxburn. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, experience and qualifications, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SALISBURY GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited by the Salisbury Hospital Group for a SECOND REGISTRAR ANÆSTHETIST (resident at Odstock Hospital). The post, which is vacant now, is recognised for the D.A. and F.F.A. R.C.S.

Further details and application forms obtainable from and should be returned to the Group Secretary, Odstock Hospital, Salisbury, Wilts, within 14 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the E.N.T. Department. The Department is recognised for D.L.O. and F.R.C.S. Post vacant 20th March.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury, Wilts.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (Gynæcological and Obstetric Unit) which becomes vacant mid-April, 1954. The Unit comprises 40 obstetric beds and 35 gynæcological beds and is recognised for the Diploma and Membership of the Royal College. Preference will be given to candidates with previous experience in these subjects.

Apply immediately, stating age, nationality, qualifications, and experience, with 2 recent testimonials, to the Group Secretary, Odstock Hospital, Salisbury.

SHEFFIELD NO. 1 HOSPITAL MANAGEMENT COM-MITTEE. Locum SENIOR HOUSE OFFICER (general medicine) required for duties at the City General Hospital and Fir Vale Infirmary for the period 1st April–14th July, 1954. Remuneration at the rate of £13 per week with a deduction for residence.

Apply, naming 2 referees, to the undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR (obstetrics and gynæcology—transitional appointment) required from 1st July, 1954, for 1 year in the first instance but not beyond 31st December, 1955, at City General Hospital, Sheffield. Applications invited from Senior Registrars in obstetrics and gynæcology in their fourth or subsequent years and from those who held such posts for 3 years or more but vacated them after 1st January, 1951.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10, by 15th March, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Sheffield NATIONAL CENTRE FOR RADIOTHERAPY. Whole-time SENIOR REGISTRAR required. Candidates should possess the Diploma in Radiotherapy or a higher qualification in medicine or surgery. Duties at the National Centre for Radiotherapy, Sheffield, but there may be occasional duties at associated Centres in the Region. Appointment for 1 year in the first instance, reviewable annually.

Applications, giving age, nationality, qualifications, present and previous appointments with date, and naming 3 referees, to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th March, 1954.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following posts :—

Royal Infirmary

(*a*) NON-RESIDENT REGISTRAR in Neurosurgery. The post offers useful surgical and diagnostic experience in neurosurgery and opportunity for research in electroencephalography or neuropathology.

(*b*) RESIDENT SENIOR HOUSE OFFICER in Neurosurgery. The appointment will be useful for persons studying for higher surgical or medical qualifications.

Royal Hospital

(*c*) NON-RESIDENT SENIOR REGISTRAR in Plastic and Jaw Surgery.

Applications for the above posts should state age, qualifications and experience with the names of 3 referees, and should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, for the posts (*a*) and (*b*) before 30th April, 1954, and in the case of post (*c*) immediately.

SIDCUP, KENT. QUEEN MARY'S HOSPITAL. Resident SENIOR HOUSE OFFICER (anæsthetics) required to commence duty as soon as possible. Salary £670 p.a., less £150 p.a. for residential emoluments. The post is recognised for the F.F.A. R.C.S. and D.A. Consideration will be given to the appointment of a locum tenens with effect from 1st March, 1954.

Applications, stating nationality, age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary, Sidcup and Swanley Hospital Management Committee.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). The successful applicant will be allowed to attend for 2 days a month at The Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination. Vacant 1st April, 1954.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to the Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised under conditions of F.F.A.R.C.S. examination. Vacant immediately.

Applications, stating age, nationality, qualifications and previous experience, together with copies of recent testimonials, should be sent to the Group Secretary, Royal Salop Infirmary, Shrewsbury.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Post vacant 16th April, 1954. Salary, &c., as nationally advocated. Preference given to candidates intending to specialise in pædiatrics.

Applications, with copies of testimonials, to be submitted immediately to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER SENIOR HOUSE OFFICER (orthopædic) required for the above Hospital (Orthopædic Unit 74 Beds). This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

ST. HELENS. ECCLESTON HALL HOSPITAL. (75 Beds.) ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. The person appointed will work under the supervision of the Consultant Chest Physician for the Group. There are 75 Beds and the work comprises all types of tuberculosis. Good residential accommodation for a single person, Male or Female, is available.

Applications to be forwarded to N. RICHARDS, Secretary, Group Office, Whiston Hospital, Prescot.

SOUTHPORT AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Southport General Infirmary

SENIOR HOUSE OFFICER (surgical and casualty).

Southport Promenade Hospital

SENIOR HOUSE OFFICER (surgeon), duties mainly concerned with E.N.T. and orthopædic work.

Above resident posts are tenable for 12 months in first instance at £670 p.a., less £130 for board, &c.

Apply, stating age, qualifications, nationality and experience, with copies of 2 testimonials, to—

T. CROOK, Group Secretary,
Southport and District Hospital Management Committee,
Promenade Hospital, Southport.

SOUTHPORT GENERAL INFIRMARY. Senior House OFFICER in Anæsthetics (resident). Hospital recognised for D.A. Post tenable for 12 months in first instance at £670 p.a., less £130 for board, &c.

Apply, stating age, qualifications, nationality, and experience, with copies of 2 testimonials, to—

T. CROOK, Group Secretary,
Southport and District Hospital Management Committee,
Promenade Hospital, Southport.

SOUTHEND GENERAL HOSPITAL. Applications are invited for the post of SECOND CASUALTY OFFICER (House Officer grade) with duties in the Fracture and Orthopædic Department. Post vacant 16th April.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, to reach the undersigned by 18th March, 1954. J. C. FIELD, Secretary.

STOCKTON-ON-TEES. THE CHILDREN'S HOSPITAL, Durham-road, (74 Beds.) CLEVELAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER or alternatively SENIOR HOUSE OFFICER according to experience of candidate. The appropriate salary and conditions of service being in accordance with the Ministry of Health regulations.

Applications, with copies of 2 recent testimonials, should be forwarded to the undersigned at West Lane Hospital, Middlesbrough, as early as possible.

L. BRITTAIN, Group Secretary.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE OFFICER (gynæcology and obstetrics, mainly surgery). Recognised for M.R.C.O.G. (gynæcology).

Applications, giving full details, together with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (475 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of SENIOR HOUSE OFFICER (ophthalmics). Recognised for F.R.C.S. and D.O.

Applications, stating age, and experience, together with copy testimonials, to the Group Secretary at Head Office, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (938 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for HOUSE OFFICER (general surgery), 3 posts vacant shortly. Hospital recognised for F.R.C.S. examination, and posts recognised for experience during pre-registration period.

Apply, with copy testimonials stating age, nationality and full details of previous service, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. BUCKNALL ISOLATION HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of SENIOR HOUSE OFFICER (medical) vacant shortly.

Applications, with copy testimonials and full details, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Locum SENIOR HOUSE OFFICER (anæsthetics). The post may be resident or non-resident.

Immediate applications to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the posts of :—

SENIOR HOUSE OFFICER (orthopædics) to the above Group. The post is non-resident.

2 SENIOR HOUSE OFFICERS (anæsthetics). 1 post will be held at Stockport Infirmary, and the other at Stepping Hill Hospital, Stockport, and they may be either resident or non-resident. Both posts are recognised for the D.A. and F.F.A.R.C.S. and there are facilities for study.

Stockport Infirmary, Stockport

HOUSE OFFICER (general surgery and ophthalmology). The post is approved for pre-registration purposes and recognised for the F.R.C.S. and D.O.M.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, 59B, Shaw-heath, Stockport, Cheshire, immediately.

STOCKPORT. STEPPING HILL HOSPITAL. (491 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Surgical Officer). The post is recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, forthwith.

SWANSEA. MORRISTON HOSPITAL. (501 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER as locum tenens in the Medical Unit of the above Hospital.

Applications, stating age, qualifications and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea.

TALGARTH, BRECONSHIRE. SOUTH WALES SANATORIUM. Applications are invited for the post of RESIDENT ASSISTANT MEDICAL OFFICER (Junior Hospital Medical Officer status). This Sanatorium consists of 284 Beds for male adult pulmonary cases. Accommodation is available for a married man.

Applications, with names of 3 referees, to Physician-Superintendent.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Applications invited for post of SENIOR HOUSE OFFICER to the Special Unit for Juvenile Rheumatism. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology, and previous experience in 1 of these is desirable. Vacant 14th March and tenable for 6 months in the first instance.

Applications, stating age, qualifications and experience with dates, together with copies of 3 testimonials, to Hospital Secretary immediately.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required for post vacant 19th April. Salary on national scale. Preference given to persons seeking a pre-registration House Officer post.

Applications, stating age, experience and qualifications with dates, together with copies of 2 testimonials, to Hospital Secretary, by 12th March.

TUNSTALL. BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE OFFICER (medical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

TUNSTALL. BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for SENIOR HOUSE OFFICER (surgical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, as soon as possible.

TYNEMOUTH VICTORIA JUBILEE INFIRMARY, Hawkey's-lane, NORTH SHIELDS, NORTHUMBERLAND. (109 Beds.) Post of SENIOR HOUSE SURGEON available now. Some duties in Casualty and Orthopædic Department.

Applications from practitioners qualified at least 1 year should be sent to the Group Secretary, Preston Hospital, North Shields.

TYNEMOUTH VICTORIA JUBILEE INFIRMARY Hawkey's-lane, NORTH SHIELDS. (109 Beds.) Applications are invited from practitioners qualified at least 1 year for the resident appointment of SENIOR HOUSE PHYSICIAN and should be sent with 2 testimonials to Group Secretary, Preston Hospital, North Shields, Northumberland.

TYNEMOUTH VICTORIA JUBILEE INFIRMARY (109 Beds), and PRESTON HOSPITAL (331 Beds). SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Posts of HOUSE SURGEON now available at above Hospitals. Recognised for pre-registration purposes and, under certain conditions, for F.R.C.S.

Applications to Group Secretary, Preston Hospital, North Shields.

VENTNOR, ISLE OF WIGHT. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (249 Beds.) Required :—

(1) JUNIOR HOSPITAL MEDICAL OFFICER, and

(2) SENIOR HOUSE OFFICER.

Resident posts, unmarried. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointment in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

SENIOR HOUSE SURGEON, salary £670 p.a., less a charge of £130 p.a. for board, lodging, &c., or

Locum SENIOR HOUSE SURGEON, salary £13 per week, less a charge of £2 10s. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

W. E. EASTWOOD, Deputy Group Secretary,
Hospital Management Committee No. 10 Wakefield B Group.
Victoria Chambers, Wood-street, Wakefield.

WEST DORSET GROUP OF HOSPITALS. Locum Tenens REGISTRAR in Obstetrics and Gynæcology for the above Group, for approximately 6 weeks from 17th April. Main duties at Portwey Hospital, Weymouth (42 obstetric and 26 gynæcological beds).

Applications immediately to Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester.

WELLS, SOMERSET. MENDIP HOSPITAL. Applications are invited for the appointment of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (married or single), with experience in psychiatry, for duty at the above Mental Hospital. Salary will be on the scale of £700–£50–£1000 p.a., with a charge of £150 per year for residential services, or, in the case of a married man, a charge for a flat. The appointment will be in accordance with the terms and conditions of service issued by the Ministry of Health.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be forwarded to the Physician-Superintendent, Mendip Hospital, Wells, Somerset, not later than 10 days after the publication of this advertisement.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment of HOUSE SURGEON (non pre-registration). The appointment will be for a period of 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WOLVERHAMPTON. THE ROYAL HOSPITAL. Wolver-HAMPTON GROUP NO. 16 HOSPITAL MANAGEMENT COMMITTEE. Applications for the post of REGISTRAR in Department of Diagnostic Radiology, which falls vacant on 14th April, are invited. Candidates, who should possess at least Part I of a Diploma of Medical Radiology, will be expected to undertake work in the other hospitals of the Group.

Applications, stating age, qualifications, and experience, &c., should be addressed to the Group Secretary, The Royal Hospital, Wolverhampton, not later than 25th March, together with the names of 3 referees. The Hospitals may be visited by arrangement.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

HOUSE OFFICER (Ear, Throat and Nose Department), vacant now.

New Cross Hospital, Wolverhampton

HOUSE OFFICER (general surgery), vacant now.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.

The Royal Hospital, Wolverhampton.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of PÆDIATRIC HOUSE PHYSICIAN to commence duties immediately at the above Hospital. Duties at the Pædiatric Unit (50 Beds and cubicles) will be under the supervision of the Consultant Pædiatrician.

Applicants should apply, enclosing 2 recent testimonials, to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence immediately. The appointment is recognised for the Diploma F.R.C.S. (Eng. and Edin.), and is an approved pre-registration House Officer post. Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) for the Casualty Orthopædic Department of the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary £700–£50–£1000 p.a., Whitley Council conditions of service.

Applications, giving details of age, qualifications, and previous experience, together with copies of 2 recent testimonials, should be sent to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Wrexham.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments :—

REGISTRAR in General Medicine, based at the Caernarvon and Anglesey General Hospital, Bangor, and may also be expected to serve other hospitals within the district. The post is non-resident.

REGISTRAR in Traumatic Surgery, based at St. David's Hospital, Cardiff, and may also be expected to serve other hospitals in the district. The post is resident.

These posts will be subject to review at the end of the first year.

Application forms obtainable from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

YORK. COUNTY HOSPITAL, CITY HOSPITAL, AND YEARSLEY BRIDGE HOSPITAL (Infectious Diseases Hospital of 86 Beds). SENIOR HOUSE OFFICER in Pædiatrics and Infectious Diseases to spend approximately half-time in connection with pædiatric duties at the County Hospital (22 pædiatric beds), City Hospital (32 pædiatric beds) and other hospitals of the Group, and approximately half-time at Yearsley Bridge Hospital. Candidates should have had previous experience of pædiatrics and infectious diseases. Preference given to holders of D.C.H. Post vacant from 15th March, 1954, for 1 year in first instance. Salary £670 p.a., less £170 for residence at Yearsley Bridge Hospital.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, to the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL, Edward-street, WEST BROMWICH. (144 Beds.) WEST BROMWICH AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE, GROUP NO. 18. Applications are invited for the posts of :—

HOUSE PHYSICIAN, vacant on 1st April, 1954.

HOUSE SURGEON, vacant on 1st May, 1954.

Salary, terms and conditions in accordance with the Ministry of Health regulations. The posts are tenable for 6 months, resident, and are recognised for pre-registration scheme.

Applications, together with 3 recent testimonials, should be submitted to J. O. ROBINS, Esq., Group Secretary.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (218 Beds)

(*a*) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer), vacant now. Recognised for F.R.C.S.

(*b*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties, some orthopædics.

Broadgate (Mental) Hospital, Beverley, Yorks (650 Beds)

(*c*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Salary for (*a*) is £670 p.a., less £140 board, lodging ; for (*b*) and (*c*) £350–£450, less £100 board, lodging. Fully qualified practitioners also invited to apply for pre-registration post.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorks.

BRITISH WEST INDIES. University College Hospital OF THE WEST INDIES. Medical Staff. Applications are invited for 3 posts of REGISTRAR at the University College Hospital in the Departments of Surgery, Diagnostic Radiology, Obstetrics and Gynæcology, duties to commence as soon as possible after 15th April, 1954. Higher qualifications desirable but not essential. The appointments will be for 1 year in the first instance. Salary will be in the scale £700–£1000 p.a., depending on experience and qualifications, and is subject to a deduction of £100 p.a. in respect of board, residence, &c. Single accommodation only is provided. Return first-class passages by sea will be paid. Further information may be obtained from the Hospital Manager and Secretary.

Applications, stating age, nationality, details of qualifications and experience, together with 3 recent testimonials or names and addresses of 3 referees, should reach the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., by 20th March, 1954.

BRITISH COLUMBIA. CHILDREN'S HOSPITAL, 250, West 59th-avenue, VANCOUVER 15, B.C. 2 PÆDIATRIC RESIDENTS required for a period of 1 year commencing 1st July, 1954, for 83-Bed children's general hospital. University teaching programme. Accommodation available. Remuneration $175 per month, less $15 per month accommodation. Meals available if required. Husband and wife, if both qualified, are acceptable.

Applications, accompanied by photograph, stating age, qualifications, nationality, should be forwarded by air-mail to the Administrator, Children's Hospital, 250, West 59th-avenue, Vancouver 15, B.C.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (360-Bed general community hospital.) Approved by American College of Surgeons and American Medical Association for Internship and Residency Training. Only graduates from approved university schools accepted. Term of Internship : 1st July, 1954–30th June, 1955. INTERNES—$100 per month plus full maintenance. Return passage to England paid by Hospital after completion of interneship.

Apply Superintendent.

U.S.A. BAYLOR UNIVERSITY HOSPITAL, Dallas, TEXAS. Vacancies for RESIDENTS in Pathology in 700-Bed American Hospital in Dallas, Texas. Residency approved for 4 years training by American Board of Pathology. 12,000 surgical accessions yearly, 230 autopsies, affiliated Blood Research Center with special opportunities in hematology.

Write, Director of Laboratories, Baylor University Hospital, Dallas, Texas.

Public Appointments

BRITISH TRANSPORT COMMISSION (BRITISH RAILWAYS). LONDON MIDLAND REGION. Applications are invited from Male registered medical practitioners, aged 30–40, for appointment as ASSISTANT MEDICAL OFFICER in the London Midland Region, British Railways, initial appointment in the Manchester Area. Candidates should have a good clinical background and an interest in industrial medicine. Experience in general practice is desirable. Salary on appointment £1150 p.a., and membership of the superannuation fund, subject to medical examination obligatory.

Applications, giving full particulars of age, qualifications and experience and 2 references should be sent to the Regional Medical Officer, British Railways, London Midland Region, 66, Drummond-street, Euston, N.W.1, not later than 15th March, 1954.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. MEDICAL OFFICERS (holiday Locums). Applications are invited for the temporary appointment of 3 whole-time Medical Officers in the Maternity and Child Welfare Department to take holiday duty during the summer months, commencing on 26th April, 1954. The appointments are non-resident, and the salary offered is at the rate of £18 4s. 5d. per week. Successful applicants expected to remain, if required, for a period of 6 months.

Application forms obtainable from the Medical Officer of Health, Council House, Birmingham, 3. Completed forms to be returned to him, with copies of 3 testimonials, not later than 20th March, 1954.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications are invited for the appointment of Full-time or Part-time ASSISTANT DENTAL OFFICERS in the Maternity and Child Welfare Department. Duties will be concerned with dental inspection and treatment of expectant and nursing mothers, and young children up to the age of 5 years. In the case of whole-time posts the Officers appointed will be required to devote their whole time to official duties. The salary scale is £800–£50–£1250 p.a., with placement on the scale according to experience. The appointments are superannuable and subject to passing a medical examination and will be terminable by 1 months notice on either side. The remuneration for part-time Officers will be 3 guineas to 4 guineas per session, according to experience. The appointments will be terminable by 1 months notice on either side.

Applications, stating qualifications and experience, with the names of 3 referees, to be sent to the Medical Officer of Health, Council House, Birmingham, 3, not later than 20th March, 1954.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
TAYNUILT	ARGYLL	20TH MARCH, 1954

HER MAJESTY'S COLONIAL SERVICE. Hong Kong. RADIOLOGIST required in the Medical Department of Hong Kong for diagnostic work. Appointment will be on 2 years probation for permanent and pensionable employment. Salary, including pensionable expatriation pay, is in the scale $1630–$2548.33 a month (£1222–£1911 a year : 1 Hong Kong dollar equals 1s. 3d.). A temporary, non-pensionable, cost-of-living allowance depending upon the officer's family circumstances is also payable. Free passages in both directions are provided for Officer, wife, and up to 3 children under the age of 18 years. Quarters are provided when available at reasonable rental. Pending quarters becoming available, hotel or hostel accommodation is provided. Maximum charge for quarters, hotel, or hostel accommodation is one-eighth of basic salary. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 4 years duration. Normal retiring age is 55, and pension is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Climate is favourable for Europeans. Educational facilities are available. Candidates must possess medical qualifications registrable in the United Kingdom and a Diploma in Medical Radiology and have had experience in mass miniature radiology.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/51/011).

LEEDS. CITY OF LEEDS. Public Health Department. Applications are invited from suitably qualified and registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER. The duties of the appointment will be mainly epidemiological in connection with Immunisation and Infectious Diseases Control, and such other duties as may from time to time be required. Salary scale £950 p.a., rising by annual increments of £50 to a maximum of £1300. In determining the commencing salary, due consideration will be given to previous experience and qualifications. The first increment will take effect on 1st April following the completion of 6 months satisfactory service. The person appointed will be required to pass a medical examination and to contribute to the superannuation fund established under the Local Government Superannuation Acts, 1937–53.

Applications, endorsed "Assistant Medical Officer," must be delivered at the Public Health Department, 25, East-parade, Leeds, 1, not later than 10 A.M. on Monday, 29th March, 1954. Canvassing in any form, either directly or indirectly, will be a disqualification. I. G. DAVIES, Medical Officer of Health.

LINCOLN. COUNTY OF LINCOLN. Parts of Kesteven. Applications are invited from registered medical practitioners holding a Diploma in Public Health for the joint appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH for the Borough of Stanford, the Urban District of Bourne and the South Kesteven Rural District (population approximately 30,314). Inclusive salary for the post is £1368 15s. rising by annual increments (4 of £56 5s. and 3 of £31 5s.) to £1687 10s. Commencing salary according to experience. The appointment will be superannuable.

Application forms, together with terms and conditions of appointment, can be obtained from the Clerk of the County Council, County Offices, Sleaford, to be returned not later than 19th March, 1954. Canvassing, either directly or indirectly, will disqualify. J. E. BLOW, Clerk of the County Council.

County Offices, Sleaford, Lincs, March, 1954.

NORTHERN RHODESIA. NDOLA MUNICIPAL COUNCIL. Appointment of MEDICAL OFFICER OF HEALTH. Applications are invited from persons who possess the Diploma in Public Health and have had experience in a similar appointment. Salary grade £1700–£100–£2200 p.a., plus a temporary variable cost-of-living allowance of £312 p.a.

Intending applicants should apply forthwith (by air mail post) for further particulars.

EDWARD C. BARLOW, Town Clerk.

P.O. Box 197, Ndola, Northern Rhodesia.

WALSALL. COUNTY BOROUGH OF WALSALL. ASSISTANT MEDICAL OFFICER OF HEALTH. Applications are invited from qualified medical practitioners for the above post at a salary of £950 p.a., rising by annual increments of £50 to £1300 p.a. Possession of the D.P.H. or D.C.H. will be considered an advantage. Commencing salary according to qualifications and experience.

Further particulars and application forms may be obtained from me. W. STALEY BROOKES, Town Clerk.

Council House, Walsall.

NOTTINGHAM. CITY OF NOTTINGHAM EDUCATION COMMITTEE. Applications are invited for the post of DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER on a salary scale of £1050–£50–£1400 p.a. The appointment will be subject to the provisions of the Local Government Superannuation Acts, as amended by the National Health Service superannuation regulations.

Further particulars and forms of application may be obtained from the undersigned, to whom completed applications must be returned not later than 25th March, 1954.

F. STEPHENSON, Director of Education.

Central School Clinic, 28, Chaucer-street, Nottingham.

NOTTINGHAM. CITY OF NOTTINGHAM. Health SERVICES. Appointment of MEDICAL LOCUM TENENS Summer period 1954. Applications are invited from medical practitioners with experience of Maternal and Child Health for a Locum Tenens appointment from May to the end of September, 1954. Salary will be at the rate of £950 p.a.

Applications, accompanied by the names of 2 persons to whom reference may be made, should be sent to the Medical Officer of Health, Huntingdon-street, Nottingham, not later than 20th March, 1954.

Guildhall, Nottingham. T. J. OWEN, Town Clerk.

OLDBURY. BOROUGH OF OLDBURY. Worcestershire COUNTY COUNCIL. DEPUTY BOROUGH MEDICAL OFFICER OF HEALTH AND DEPUTY COUNTY DIVISIONAL MEDICAL OFFICER AND DEPUTY SCHOOL MEDICAL OFFICER. Applications from registered medical practitioners with D.P.H. are invited for this appointment. Medical Whitley Council scale salary (£950, rising by £50 to £1300 plus £50 as Deputy).

Application forms from County Medical Officer, County Buildings, Worcester. (M242.)

K. PEARCE, Town Clerk, Oldbury.
W. R. SCURFIELD, Clerk of the County Council.

ROTHERHAM. COUNTY BOROUGH OF ROTHER-HAM. HEALTH DEPARTMENT. Applications are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER at a salary within the scale £950 p.a. by annual increments of £50 to a maximum of £1300. The duties will chiefly concern School Health and Child Welfare Services.

Forms of application and conditions of appointment may be obtained from the Medical Officer of Health, Municipal Offices, Rotherham, and must be returned to the undersigned, endorsed "Assistant Medical Officer," not later than 22nd March, 1954. Canvassing will disqualify. JOHN S. WALL, Town Clerk.

Municipal Offices, Rotherham.

ROYAL AUSTRALIAN NAVY. Medical Officers. Appli-cations are invited from legally qualified medical practitioners for appointment as SURGEON LIEUTENANTS in the Royal Australian Navy. First appointment is for a period of either 2 or 4 years with prospect of transfer to the Permanent Naval Force or alternatively an extension of short service up to a maximum of 8 years with gratuity payable pro rata. Minimum yearly emoluments are married officers £1508, single officers £1294. All money figures quoted are Australian currency, but payment of the above rates will be made in sterling currency until departure from the United Kingdom. "D" grade, first-class passage, including wife and family, to Australia at government expense. A uniform gratuity of £219 10s. is paid on entry. Increment of £54 15s. is payable after 2 years service. On completion of period for which entered a gratuity of £250 will be paid for 2 years service and £500 for 4 years service. If a 2-year commission is extended for a period less than 2 years, gratuity will accrue pro rata. Medical Officers serve in Royal Australian Navy hospitals, ships and establishments in Australia or abroad. Generous leave is allowed, and free travel warrants in Australia to visit next of kin are given under specified conditions. Retirement provisions and invaliding benefits are provided by contributions to the Defence Force Retirement Benefit Fund. These contributions are refunded if taking discharge (other than on medical grounds) at end of short-service Commission.

Full details may be obtained from the R.A.N. Liaison Officer, Australia House, Strand, London, W.C.2, or from the Secretary, Department of the Navy, Melbourne, S.C.1.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age. The places for which applications are invited are as follows:—

ENGLAND AND WALES

Low Moor, Oakenshaw, Wyke and Queensbury (Bradford).
Caterham (Croydon).
Withernsee and Roos (Hull).
Forest Gate, E.7 (London).
Wellingborough (Wellingborough).

SCOTLAND

Taynuilt, Connel, and Kilchrennan (Oban).
New Cumnock (Cumnock).

General Practice

For an Executive Council post (England and Wales) apply on form E C.16A *obtainable from the council. Mark envelope "Vacancy."*

CANTERBURY, KENT. Applications invited for Vacancy (urban). List at present approximately 1980. Residence and surgery available. The practice has been in the hands of a lady doctor for more than 25 years. Apply on E.C.16A before 20th March, 1954, to—

F. E. MILES, Clerk,
Kent and Canterbury Executive Council.
11, Station-road, Maidstone.

Hospital Services: Non-Medical Appointment

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited from Science Graduates for a post of NON-MEDICAL BIOCHEMIST in the Board's Laboratory Service. The main duties are at Craig Dunain Hospital, Inverness, with opportunity for biochemical investigations into mental illness. The post is in the basic grade, and the salary scale for candidates who have completed the probationary period is £585–£30–£765 p.a.

Further particulars and application forms are obtainable from the undersigned with whom applications should be lodged by 31st March, 1954. A. M. FRASER, M.D.,

Secretary and Administrative Medical Officer.

Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

The Medical Defence Union. Applications are invited from registered medical practitioners, not exceeding 40 years of age, for appointment as an Assistant Secretary to the Medical Defence Union. The salary scale will range from £1300, rising by annual increments of £50 to £1750 p.a. and the successful applicant will be placed at a point on that scale according to his experience and qualifications for the appointment. The practitioner selected will be required to submit to a medical examination, and to contribute to the Union's superannuation fund.

Applications (12 copies), stating age, qualifications, and medical experience, together with the names of 3 persons to whom reference can be made for further information, should reach the Secretary, The Medical Defence Union, Tavistock House South, Tavistock-square, W.C.1, not later than 21st March, 1954.

Journal of the Indian Medical Profession. The pro-prietors, A. MacRae & Co. Ltd., United India Building, Sir Phirozshah Mehta-road, Bombay, 1, India, invite contributions from British Surgeons and Doctors of repute, such as Original Articles, Case Notes, &c. MSS, sketches, photographs, &c., should be air-mailed as soon as possible.

F.I.M.L.T., 15 years experience, including Photography, desires responsible and interesting post.—Address, No. 901, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

A Surgeon-Practitioner is required for the Dickoya Districts, Ceylon. Applicants should have a Medical Degree and be Fellows of 1 of the Royal Colleges of Surgeons. Substantial retaining fee, free furnished bungalow, and extensive general practice. Modern Nursing-home, with all facilities, within 3 miles, good climate, elevation 4000 feet. Passage paid.—For further particulars apply to Hon. Secretary, DICKOYA DOCTOR SCHEME, New Valley, Norwood, Ceylon.

"Hand-picked" Secretaries and Typist-receptionists for Consultants: whole or part time. Highest standards of efficiency.—WIGMORE AGENCY, 67, Wigmore-st., W.1 (HUN 9951/2/3).

Secretary required by doctor in south Somerset town. Secretarial training with good shorthand and typing essential. Salary £400 a year.—Write, stating age and experience, to Address, No. 903, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Responsible Woman (early 40's) requires post Con-sultants Home, Town or Country, as domestic factotum. Is experienced cordon bleu cook. Car driver. Preferably sole charge, excellent references.—Please Telephone Henley-on-Thames 854.

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1. MUS: 5386–7.

Austin A30, A40, and A70 range—new Ford Popular and all Show Models. Limited number of orders now acceptable from proven essential users.—Application form, brochures, easy terms, from: H. A. SAUNDERS LTD., 140/144, Golders Green-road, London, N.W.11.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Progressive Businessmen's Forum. Smoking and Cancer —The Facts—your questions answered by Dr. Richard Doll (who carried out research on which the recent Government statement was based), Thursday, 11th March, 7.45 P.M., at the Cora Hotel, Upper Woburn-place, W.C.1. Ring MAY: 4245 for reservations.

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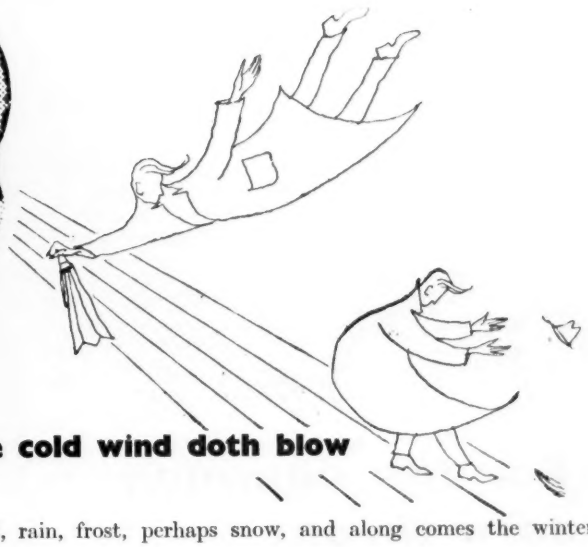

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